

THE IRON AGE.

THURSDAY, FEBRUARY 15, 1900

The Most Perfect Machine Shop.*—VII.

Building No. 16 of the Schenectady Works of the General Electric Company.

BY S. D. V. BURR.

The Bement, Miles & Co. Rotary Planer.

The rotary planer built by Bement, Miles & Co. is shown in Figs. 42 and 43, the latter showing the arrangement of the drive in plan and elevation. The only difference between the motor and the belt drive is that the motor is located in exactly the same position as the pulleys were, and the motor shaft operates the pinion

cured to the front of the bed for receiving the work, as illustrated in Fig. 42. The cutter head has a lateral adjustment of 3 inches for convenience in setting. The saddle carrying the spindle is 4 feet in length and has a traverse on the bed of 8 feet. The machine has eight changes of automatic feed and quick power adjustment in either direction.

The Newton Portable Drilling Machine.

A machine of special design built by the Newton Machine Tool Works is shown in Figs. 44 to 46. This tool consists of a base plate carrying a round column upon which moves the cutter with its motor and all of the driving mechanism. The spindle is driven by a 5 horse-power motor, located as shown in the drawings, which

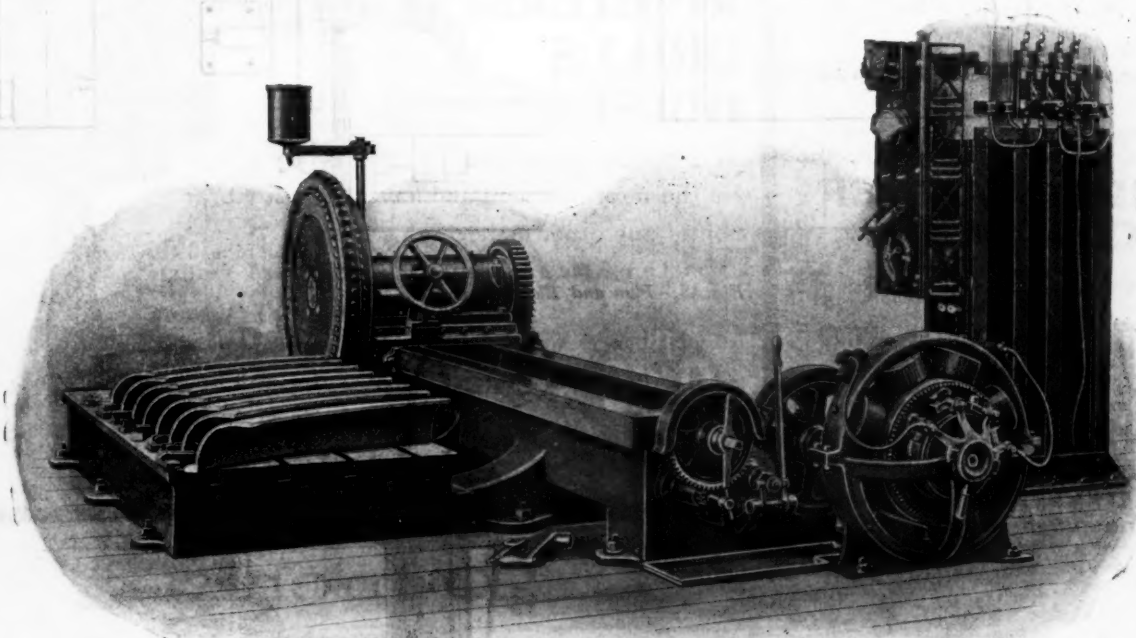


Fig. 42—Bement, Miles & Co.'s Rotary Planer.

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which drives the spur gear on the main shaft precisely as the pulleys did. On this machine, therefore, the change is a very simple one.

The machine in general consists of a bed $13\frac{1}{2}$ feet long, planed and fitted, on which traverses a saddle through a distance of 10 feet, carrying a rotating disk which is mounted with cutting tools upon a circle of 43 inches in diameter. The disk has a steel tire shrunk upon its outside, and in this tire are placed the set screws which hold the tools in position. The disk is adjustable in and out by means of a heavy slide in which this spindle rotates; this provides the adjustment for setting the depth of cut. The saddle is traversed upon the bed by a heavy screw fitted with variable feed motions, and also with quick traverse motion for rapidly moving the saddle upon the bed to different positions as required. The disk is driven by an internal gear and pinion actuated by a main shaft and intermediate gearing at the back of the bed. The main shaft is driven by a spur wheel upon its outer end which is actuated by a pinion on the motor shaft. A large work table is se-

is geared to the worm shaft. Change of speed is obtained by change gearing. The movement of the head on the column, or the vertical adjustment, is obtained from the motor placed on top.

The next machine, Fig. 48, is also a portable drilling and boring tool built by Newton, which differs somewhat from the one just mentioned. The head is gibbed between two uprights, and the driving of the feed and the quick movement are obtained from a 5 horse-power motor clamped on top of the housing. On the base of the machine is a saddle on which the main column swivels so that it can be set at any angle. The spindle is $4\frac{1}{2}$ inches in diameter and has a hand adjustment for convenience in setting the cutter. While the other machine has an automatic feed of 30 inches, this has an automatic feed of 4 feet, also two changes of speed for milling and a quick power movement in either direction. Although this tool was intended particularly for milling the dovetailed grooves in the armature spiders, it is also largely employed for drilling and boring.

The engraving, Fig. 47, represents a portable drilling and boring machine suspended from the crane.

*See *The Iron Age*, January 4, 11, 18, 25 and February 1 and 8, 1900.

Small Tools.

The toolroom, as shown in Fig. 10, is centrally located in the western side of the building. The usual system is in vogue, each man depositing a check for the

viding the men with one or more tools to be held in reserve not being held good policy in a works of this character employing from 6000 to 7000 hands. Neither is the messenger method of obtaining tools considered advis-

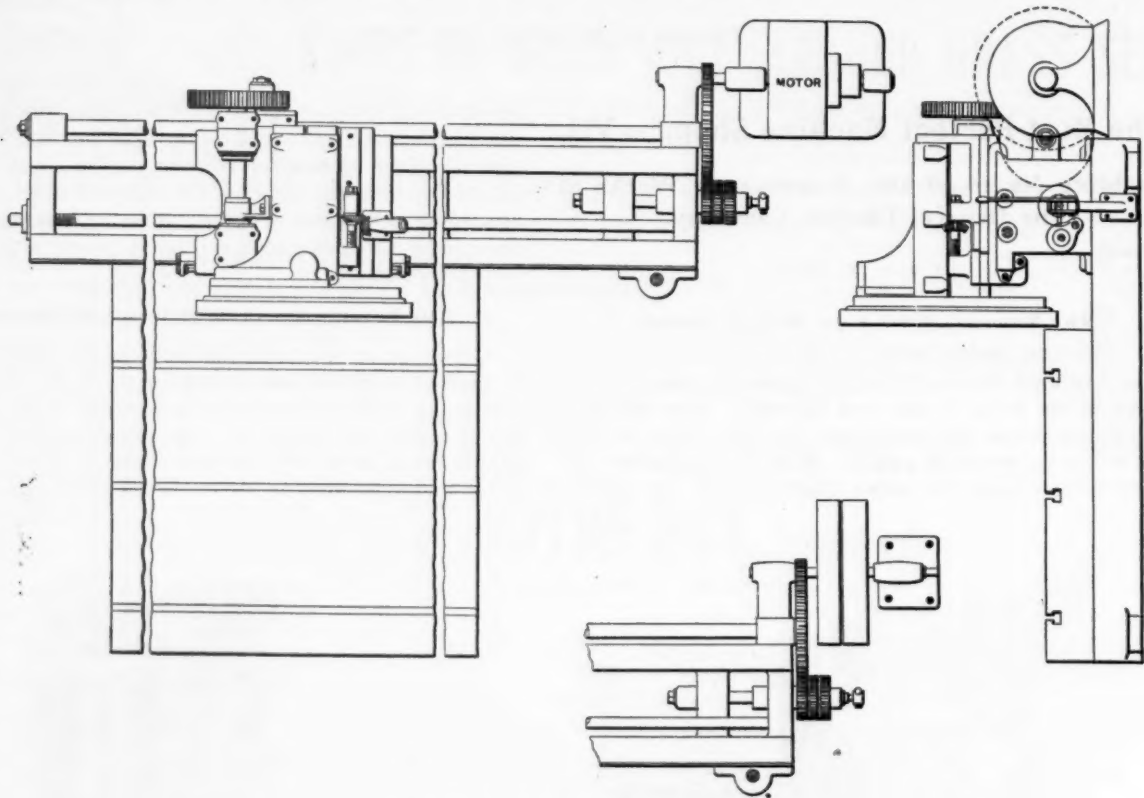


Fig. 43.—Plan and Elevation Fig. 42.

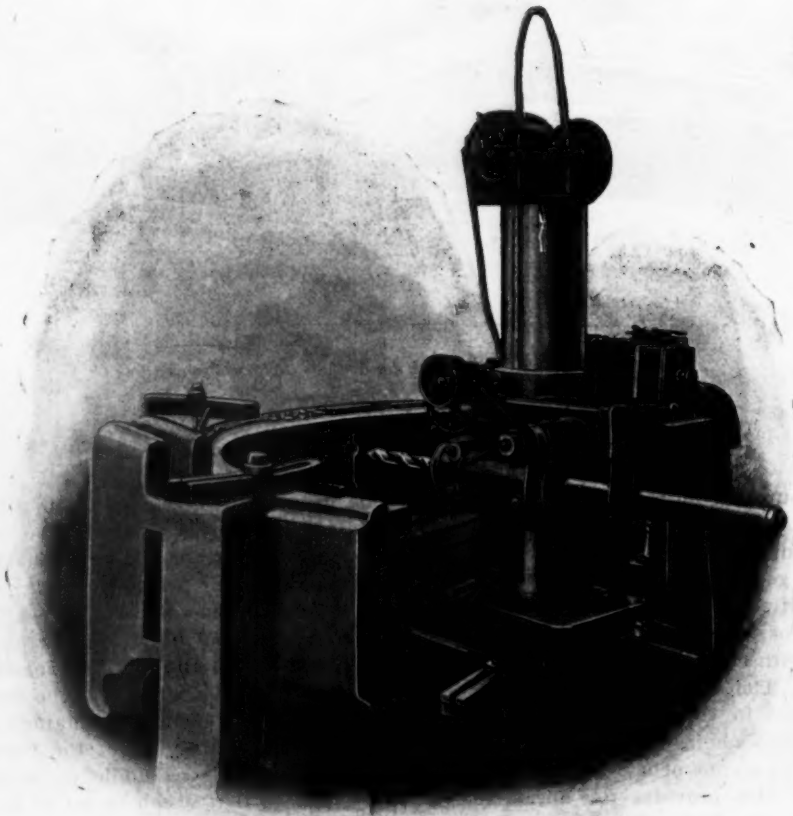


Fig. 44.—Newton Portable Drilling Machine.

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tool he receives. When a new tool is required the man himself goes to the toolroom and obtains it. But one tool of a kind is permitted to be out at the same time by any one man, the custom sometimes followed of pro-

vide in a shop of this size, as in most cases the tool would be idle anyhow for the time between the discarding of the dull or broken tool and the obtaining of a new one. Where such a vast number of small tools are

employed, all of which may be considered valuable, it becomes necessary to look after them carefully, and a duplicate plan, such as giving a man an extra tool, would result in the distribution throughout the entire plant of thousands of dollars' worth of material. It is thought best, therefore, to conduct the toolroom in accordance with the above.

Management of the Shop.

Building No. 16 is in direct charge of Mr. Rohrer, electrical superintendent, and Mr. Riddell, mechanical superintendent. There are three departments, made up as follows: The machine shop proper, commutators and fittings, and the mica department. Over each is a foreman who reports directly to the superintendent, and under whom there are assistant foremen responsible to him alone. Thus in the mechanical department there

superior. There is no clashing and no unjust interference, the result being harmonious action throughout.

Additions.

Since preparing the above individual lockers have been placed in the washrooms. These are made of wire netting, and are formed with a little receptacle at the top to receive the lunch basket, the space immediately below being for clothing. As the floor of the washroom is cemented and pitches to a common point for drainage the entire room and its fittings can be washed down as often as may be necessary. Each locker is provided with a key.

Outside of the buildings arrangements have been made for a gantry crane to traverse the southern half of the western side of the yard. This will cover the two shop tracks shown in Fig. 11, will have a span of 40 feet

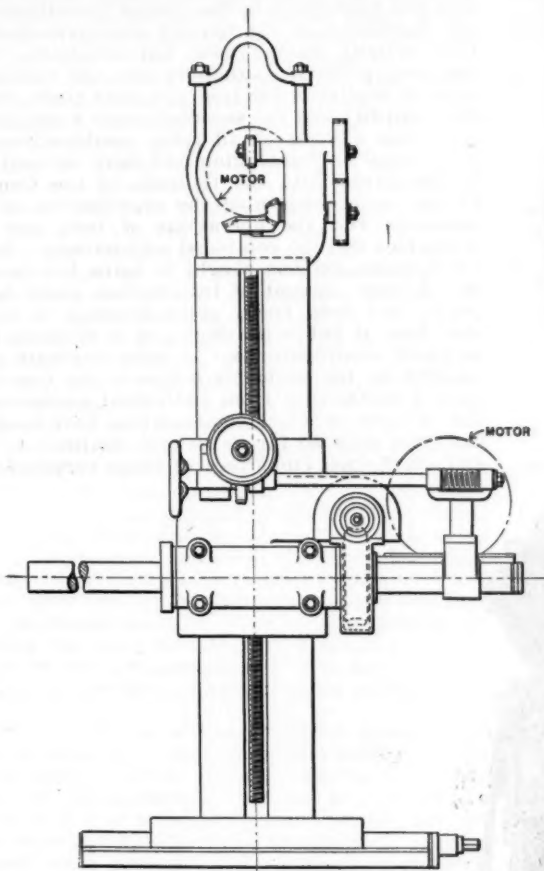


Fig. 45.

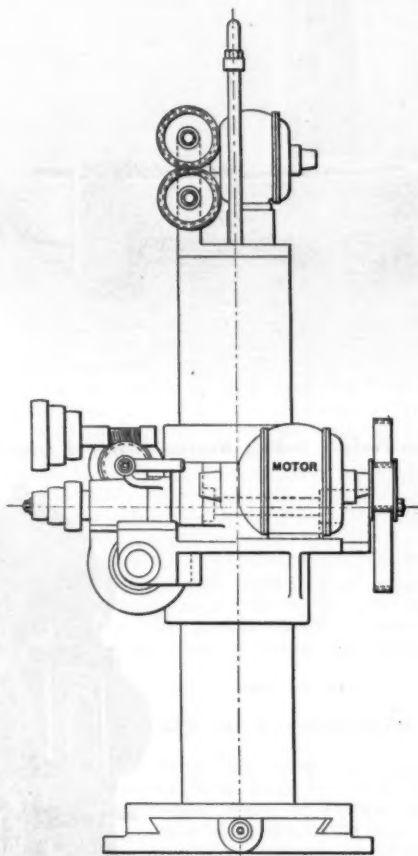


Fig. 46.

Elevations of Fig. 44.

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are seven of these subforemen, in the commutator and fittings department six, while there is none in the mica department. These foremen have direct control of the men, the work being so apportioned that they do not interfere one with the other.

The shifting of the portable tools is done under the direction of the foreman of the floor plate. There is one man whom long experience has made an expert in the matter of "hitching on work," who is familiar with the strength of rope and chain, who looks after the moving of work in the raw and partly finished condition. This position is an important one, owing to the peculiar shapes of some of the pieces, and, further, owing to the fact that an injury to a partly finished piece would mean a considerable loss.

We thus see that the system is so graduated that every employee knows exactly for whom he is working and to whom he is responsible. What is most essential, he is further aware of the fact that he will not be interfered with in any way from any one outside of his direct

and ultimately a travel of 400 feet. This, in connection with the two derricks now in position, will provide for the handling of all heavy castings, their removal from the cars, storage until needed in the space covered by the gantry, and the final placing of them upon the shop cars.

Our Indebtedness.

We cannot close the above series of articles descriptive of Shop No. 16 of the General Electric Company, at Schenectady, without acknowledging our indebtedness to the officers of the company, who did everything in their power to further the matter.

(THE END.)

United States Consul-General Maxwell writes from Santo Domingo that near Cotul, 50 miles inland from Samana Bay, there is reported to be a valuable iron ore deposit. The distance from the town to the river is 15 miles, and the river is deep enough to float vessels of 15 to 20 feet draft. Local labor is said to be plentiful and cheap.

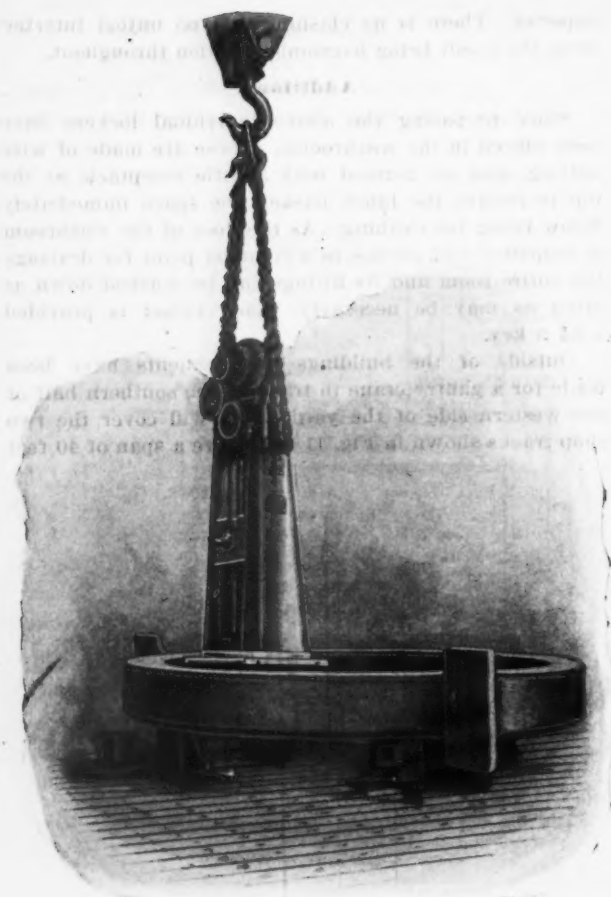


Fig. 47.—Newton Portable Drilling Machine Suspended from Crane.

The Federal Industrial Commission.

No General Recommendations Likely.

WASHINGTON, D. C., February 13, 1900.—It is announced that the Federal Industrial Commission will transmit to Congress about February 25 a preliminary report on the subject of trusts and combinations. This document will be a report in name only, however, for in spite of the thoroughness with which the subject has been investigated and the length of time given up to discussion and deliberation, the Commission now finds itself wholly unable to unite upon any recommendations of importance looking to legislation, and there is every reason to believe that no conclusions or recommendations of any consequence will accompany the data which are to be transmitted to Congress.

This somewhat disappointing result of more than a year's labors is especially significant when it is remembered that at least one-half of the time of the Commission has been given to the special investigation of trusts and combinations, the inquiry into other fields of industrial activity having been but desultory. Much time has been given to examining into the various combinations of capital in the iron and steel trade, the Standard Oil Company and the so-called sugar trust, and the most important officials of all these combinations have willingly come to Washington and have devoted much time in complying with the requests of the Commission to furnish data concerning the organization of their combinations and the operations of both the constituent companies and the combined corporations. Nothing that the Commission has sought to learn has been withheld and a large amount of information never before made public has been freely communicated to the Commission, both at public hearings and in response to specially prepared interrogatories. In order to obtain all the light possible on the problems before it the Commission has invited statements from individual producers in every line of trade in which combinations have been made and has even gone so far as to give hearings to discharged and disaffected employees of large corporations with a

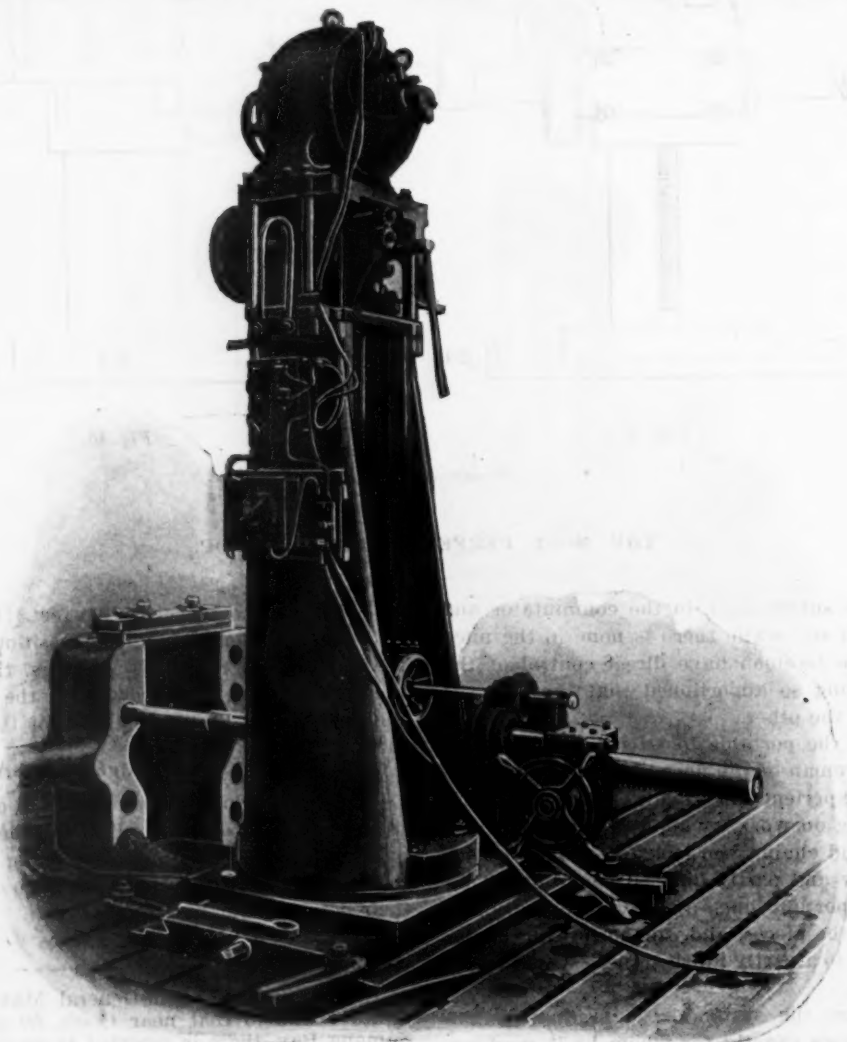


Fig. 48.—Newton Portable Drilling Machine.

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view to bringing out criticisms from every possible quarter. Some of these witnesses have since been thoroughly discredited by testimony given in rebuttal concerning their relations with their past employers. In short, the Commission has exhausted every source of possible information with regard to the methods of organization and operation of the leading combinations of capital throughout the country and their effect upon both independent manufacturers and the great mass of consumers. After all these efforts it seems remarkable that the Commission should now find itself in a position in which it cannot reconcile the antagonistic views of its members to such extent as to arrive at any conclusions of importance concerning any of the main or collateral features of the great industrial operations which have been made the subject of so exhaustive an inquiry.

Prior to the convening of Congress the Commission decided to make a preliminary report covering that branch of its investigations devoted to trusts. It was then decided to transmit all the testimony taken on this subject, embracing some 1300 printed pages, together with a synopsis of the testimony, a topical digest showing briefly the statements made by the principal witnesses concerning the chief points of the investigation, and a separate volume containing the laws of all the States enacted for the prohibition or control of trusts, combinations or monopolies. It was anticipated that the Commission would be able to make a strong report, in which Congress would be urged to enact stringent legislation for the control of combinations of capital and in which recommendations would be made to the Legislatures of the several States looking to the enactment of uniform laws to supplement the statutes of Congress, which are necessarily restricted by the limited authority of the Federal Government to control the affairs of the States. The power of Congress to control interstate commerce was regarded by the Commission as almost unlimited and as affording all necessary authority for the enactment of the proposed legislation. In this connection one of the suggestions which it was proposed to make provided for the enactment of a law directing the Secretary of the Treasury to require all combinations of capital doing an interstate commerce business to make full reports at regular or irregular intervals, as required, showing the amount of capital, number of stockholders, transfers of stock, value of product, amount of interstate shipments, &c. This proposed feature of the report has come to be known as the "publicity proposition," and when discussed by members of the Commission, has received practically unanimous support. The constitutionality of the proposition has been submitted to a number of lawyers of more or less prominence and, it is asserted, has met with their unqualified approval from a strictly legal standpoint.

In the expectation that a comprehensive report could be adopted the experts of the Commission some time ago drafted a document, which, while embracing a number of important recommendations, was yet so conservative in its tone that it was believed it would receive the approval of at least a majority of the Commission. Copies of this report were prepared and members were given some time in which to examine it before any general discussion was had. When the report was taken up for consideration, however, the fact was speedily developed that not only was it impossible to secure the unanimous vote of the Commission upon more than one or two points, but that even a majority could not be united upon any considerable portion of the report as drawn. Several of the most objectionable features of the report were eliminated in the hope of securing an agreement, but these modifications failed to bring the members of the Commission together.

There are many points of difference between the members of the Commission and the divisions cannot be said to be along any general line. At the beginning of the investigation the Commission was divided into three parts so far as preconceived opinions were concerned, one part having strong prejudices against the combinations, another part holding convictions that they represent the necessary and legitimate development of industrial conditions, and the other part without any special views on the subject. It can be stated positively that the general drift of the investigation has been to confirm the views of those who have approved of combinations of capital and to add to this faction nearly all the members who started without preconceived prejudices. So far as findings are concerned the Commission would be almost a unit upon the proposition that the practical operation of combinations of capital has been to increase wages in nearly every branch of industry. A majority of the Commission is convinced that combinations have also reduced the cost of their products to the consumer. The evidence has convinced certain members of the Commission that the tendency of all combinations has been to drive individual manufacturers out of business and also to deprive many high class employees, including office clerks, com-

mercial travelers, &c., of their means of employment. On the other hand, certain members have been convinced that, while individual manufacturers have been forced out of business, many of them have found lucrative positions in the new combinations, where their responsibilities have been great, but where they have been relieved of many of the risks which attended the operation of independent plants.

The minority of the Commission, which entered upon the investigation with strong prejudices against combinations of all kinds, is even more rabidly opposed to them at this time than at the outset. This faction has steadfastly opposed any report which did not include a wholesale denunciation of trusts and combinations as inimical to the welfare of manufacturers, employees, consumers and the interests of the country at large. These members of the Commission have been much influenced by the prejudiced statements of disgruntled employees and unsuccessful individual producers, who have charged their failure exclusively to the influence of the combinations. In view of these diverse opinions it is not surprising that it should have been found impossible to bring the Commission together upon any important recommendations to Congress. Until quite recently it was the expectation that an agreement could be reached, at least upon the so-called "publicity proposition," but while a majority of the Commission favors this recommendation, a number of members are opposed to making a formal report embracing but a single suggestion and ignoring the chief features upon which Congress will naturally expect an expression of views. Those who are now opposed to making any report have represented to their colleagues with some force that the act authorizing the Commission contains no requirements as to preliminary reports accompanying testimony, and that the evidence as to trusts may with propriety be transmitted with the synopsis and topical digest referred to without any conclusions. At the present time this view prevails with the Commission, and it is therefore expected that as soon as the work of indexing the testimony can be completed, which will be in ten days or two weeks, the matter will be sent to Congress without conclusions or recommendations.

This decision of the Commission promises to result in two or more very diverse reports on the subject of trusts, which will be submitted hereafter. The majority report will take a conservative view, though it will probably include the so-called "publicity proposition." One of the minority reports will probably be drawn by Representative Livingston and will be extreme in its hostility to combinations, and is not likely to receive the signatures of more than two or three members of the Commission.

W. L. C.

The Duty on Ferrochrome.

The following letter has been addressed to the Collector of Customs of New York by O. L. Spaulding, assistant secretary, under date of February 3: The Department is in receipt of a report of the United States attorney for the southern district of New York, dated the 9th ult., in which he states that the appeal to the United States Circuit Court of Appeals for the Second Circuit (suit 2550) of the United States vs. Dana & Co., was recently decided in that court adversely to the Government, the court affirming the decision of the United States Circuit Court below.

The question involved was as to the dutiable classification of certain "ferrochrome," imported under the provisions of the tariff act of August 28, 1894. Duty had been assessed thereon at the rate of 20 per cent. ad valorem, under section 3 of the act of August 28, 1894, as a manufactured article not specially enumerated or provided for. The importers protested, claiming that the article should have been classified under paragraph 110, by similitude to "ferromanganese," at the rate of \$4 per ton, which claim has been sustained by both the United States Circuit Court and the United States Circuit Court of Appeals in this case.

The Attorney-General having advised this Department that no further proceedings will be directed in the case, you are hereby authorized to forward to the Department the usual certified statement for refund of the duties exacted in excess in settlement thereof.

New corporations were chartered in January to the tune of \$240,000,000 of aggregate capital stock, an increase of about \$9,000,000 over December, 1899. An important feature of January's incorporations was the lack of industrial combinations included in them, December and January having been an unfavorable time for the financing of these companies. New Jersey, while still to the front, only incorporated \$70,000,000 worth of companies, while West Virginia ran but \$18,000,000 behind this sum.

The Flow of Steel.*

BY HENRIK V. LOSS.

After a brief introduction the author states that it is quite safe to assert that the vast majority of heavy hydraulic machines hitherto built have been used in connection with processes the main characteristics of which involve the flow of metals, and it is in this field that I shall bring to your attention a series of experiments which I have carried on at intermittent periods for the last six to seven years.

In pressing steel the operation can be divided into three distinct systems, each one representing separate lines of resistance to the yielding of the material, namely:

1. When the material to be treated is absolutely free to flow in any direction, being nowise confined in any die chamber, as in shearing.

the moving dies and the indicator drum. The result is a card, the ordinates of which represent the hydraulic pressure in pounds per square inch to the extent of their lengths in inches, multiplied by the product of the spring number and ratio of reduction in reducing cylinder.

We shall now consider the resistances to the first mode of flow.

Resistances to Flow.

The experiments in this field cover an extended series of indicator cards of the shearing of hot as well as of cold material. The hot work represented dimensions varying from 4 x 4 inches to about 10 x 10 inches. The cold work extended over rectangular bars of widths from 4 to 8 inches, and thicknesses of from $\frac{3}{4}$ to $2\frac{1}{4}$ inches. The latter also included angles of iron and steel of ordinary merchantable sizes. I desire to say in this place that in dealing with these different experiments I do not now have the time, nor is it the purpose of the present paper,

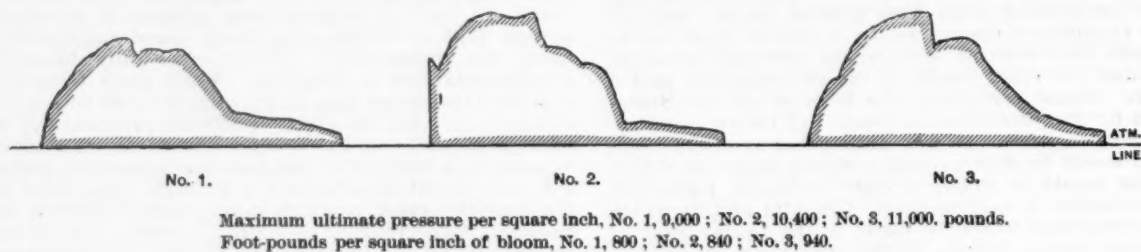


Fig. 1.—Typical Cards of the Shearing of a Hot Structural Steel Bar 6 x 6 Inches.

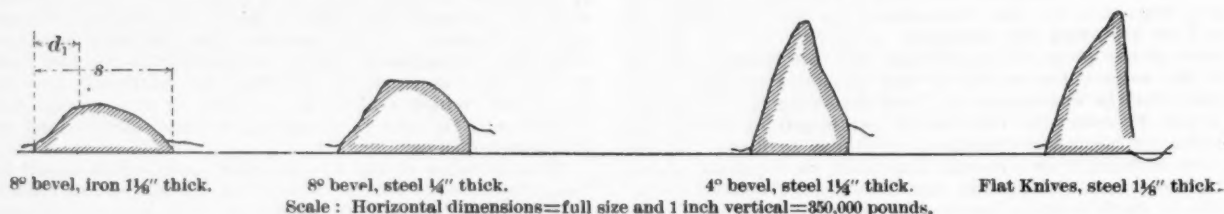


Fig. 2.—Types of Cards of Bars.

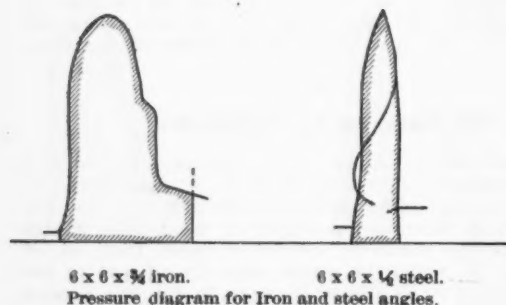


Fig. 3.—Types of Cards of Angles.

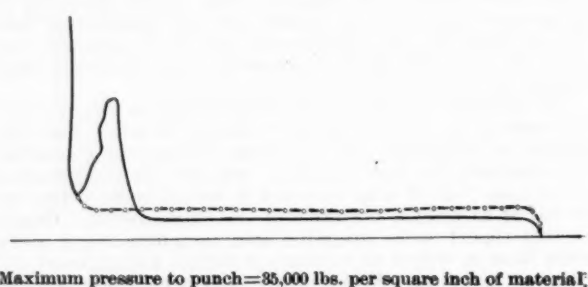


Fig. 4.—Card Showing Punching $\frac{1}{4}$ -Inch Steel with Six 15-16-Inch Holes.

THE FLOW OF STEEL.

2. When the material to be treated is partly free and partly confined, as in punching.

3. When the material to be treated is wholly confined in dies, as when upsetting rounds and squares, or bridge eye bars; also as when flanging and riveting.

In order to acquire the most possible complete information as to the strains and stresses existing during the different stages of the pressing process, a diagram showing graphically the rising or falling in resistance of the metal will naturally give the most general satisfaction. To rely upon gauges is placing a dangerous confidence when using high pressures, as the water hammer—which always exists to a greater or smaller degree—will quickly ruin them. Besides, a gauge would have to be used in connection with some other additional instrument controlling the stroke of the press if a complete record is to be secured. Due to these conditions I have, therefore, adopted in all my experiments the application of a hydraulic reducing cylinder, the small area of which is connected as close as possible to the main operating ram, while to the greater area is connected an ordinary steam indicator. The larger area, as well as the indicator cylinder, have, previous to each experiment, been filled with water and a connection has been accomplished between

to give anything like a complete essay of all the detailed results derived, because the indicator cards on each field represent such volumes of interesting information that separate papers can be written on the resistance characteristic to each system. It is the purpose, however, to give somewhat of a general view with reference to such figures and pressures that each system developed, and which might illustrate the duties of the pressing machinery which the mechanical engineer in this special branch may be called upon to design. Fig. 1 represents typical cards of the shearing of a hot bar. It is seen how the resistances are gradually increasing, finally reaching a maximum at an early stage, and while afterward decreasing are nevertheless existing throughout the entire stroke—that is, up to the time the knife has penetrated the entire thickness of the bloom. Both knives were flat, with no back clearance.

The maximum resistance increases as the temperature is lowered, as shown by the different heights and areas of each succeeding card, all having been taken one after the other from the same ingot, as it came from the blooming rolls.

Results of First Test.

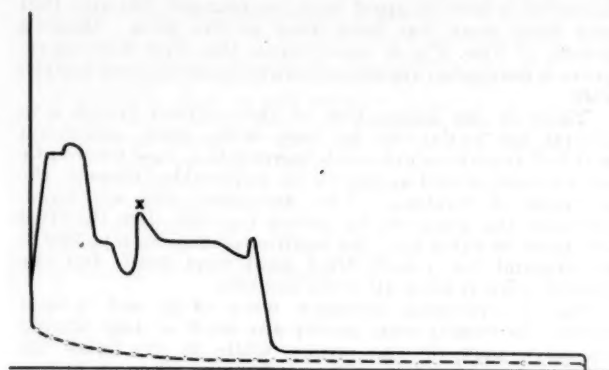
The general results, as far as actual figures are concerned, can be summed up as follows:

* Abstract of paper before the Franklin Institute.

Resistance per square inch varies from about 5000 pounds for a 9 x 9 inch bloom to about 9000 pounds for a 6 x 6 inch, and reaching about 11,000 pounds for a 4 x 6½ inch, which figures all represent steel of about 0.20 per cent. carbon, 70,000 pounds ultimate, and at such temperatures which the bloom generally possesses when first reaching the rolls, say about 2500 degrees F. As it passes through the mill the bloom gradually cools, and as the last billet is cut the temperature is decidedly decreased, say possibly down to about 1800 degrees, and is having its resistance correspondingly increased at a rate of about

Necessary pressure per square inch of section to shear a cold bar made from 70,000 pounds steel, and with flat knives, equals about 48,000 pounds. For an angle of 4 degrees of knife blade the pressure per square inch increases from 36,000 pounds for bars of 1 inch thickness up to 45,000 pounds for 2 inches of thickness. Within the same limits of thicknesses, with 8-degree blades, the power necessary would vary from about 22,000 to 32,000 pounds per square inch.

Energy per square inch consumed in cutting rectangular steel bars is as follows:



Maximum pressure to punch=712 pounds per square inch

Fig. 5.—Card Showing Punching Two Holes Each 2¼ x 5 Inches, and also 23 15-16-Inch Holes, all through 7-16-Inch Steel.

50 per cent. for the larger bloom and 100 per cent. for the lesser one.

The energy in foot-pounds at the first cuts varies from 540 for the 9 x 9 inch bloom to 800 for the smaller one, which figures are increased with the decreasing temperature at a rate of about 40 per cent. for the larger dimensions and 75 to 80 per cent. for the smaller ones.

Cards were taken on spring steel with 1 per cent. carbon, possessing an ultimate of 130,000 pounds per square inch. Its resistance and energy when compared to the 0.20 per cent. steel were increased about 25 and 14 per cent. respectively.

The local irregularities on these cards are due to the fact that the hydraulic shear upon which the experiments were made was driven directly by a duplex pump (without accumulator), and the want of uniformity in flow of water from a pump of this kind was naturally transmitted to the indicator needle in the manner as shown graphically.

Typical Cards.

Fig. 2 represents typical cards of the shearing of a cold bar, and the general outline of such a card will not

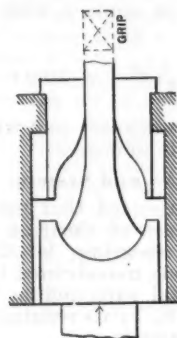
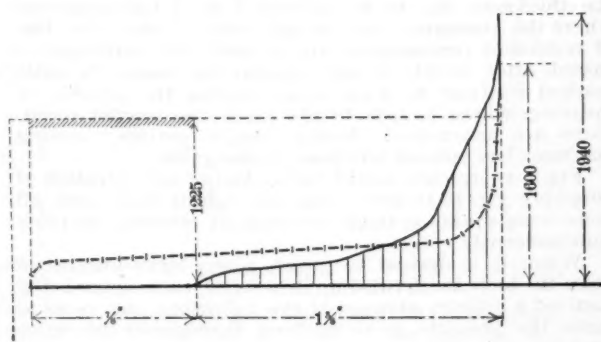


Fig. 6.—Section of Dies.



3/8" rivet, 2 1/4" material, 67 tons on rivet, 2 1/4" stroke.

Fig. 7.—Indicator Cards of 3/8 and 1/2 Inch Rivets.

THE FLOW OF STEEL.

vary with the form and shape of the bar to be severed. The first of the above figures represents an iron bar 5 x 1½ inches, the second a steel bar 5 x 1¼ inches, both of these two being cut by a knife with an angle of 8 degrees. The third card was taken from a steel bar 5 x 1¼ inches, with an angle of knife of 4 degrees, while the last of all was taken with a flat knife on a 5 x 1½ inch bar. The pressure rose quicker than with hot work, and the flatter the knife the earlier in the stroke was the maximum resistance reached. This maximum also occurred at a somewhat later period with an iron than with a steel section, showing in the former a greater distribution throughout the stroke of cutting. It is only fair to assume that this latter feature will be equally in evidence when comparing soft steel to a high tension material. With flat knives the card becomes very short, indicating generally so violent a rupture as to make the needle vibrate quite considerably. The average results on rectangular bars as to actual figures can be summed up as follows:

FOR 1 INCH THICK BARS.

700 inch-pounds for 8 degrees bevel.
1,000 inch-pounds for 4 degrees bevel.
1,300 inch-pounds for flat knives.

For 2 inches thick bars the above figures have risen to 1600, 2000 and 2500 pound-inches, respectively.

Fig. 8 represents types of cards of angles, in both cases using flat knives, the first one being taken from a 6 x 6 inches by ¾-inch iron angle, and the second from a steel angle, with dimensions of 6 x 6 inches by ½ inch. The same general characteristics are seen to exist here as with the rectangular bars. The average results in figures for cutting iron and steel angles can be placed as follows:

The necessary power to cut a steel angle with dimensions of legs a and b , and with a thickness t , is:

$$P = \frac{1}{2} f (a + b) \sqrt{t}$$

where f is the ultimate per square inch.

The energy per square inch in foot-pounds can be written in the same manner:

$$E = 1600 (a + b) t^2$$

where the letters denote the same as above.

Summing up the general characteristics of the indicator cards, as taken by and derived from the system of pressing metal without any restricting dies whatever, we find the resistances to rise quickly and reach maximum at an early period, which point being reached, a more or less gradual decrease takes place until rupture occurs. The metal itself will mainly flow in the direction of the pressure, having little or no side flow, while the point of rupture for cold work is always reached before the entire thickness has been penetrated. This point of the stroke, when measured in inches from the time the knife comes in contact with the bar, is represented by the formula:

$$s = \frac{1}{2} \left(\sqrt{t^2 + w \tan a} \right)$$

where t and w equal thickness and width of bar and a represents angle of knife in degrees.

The Second System.

It has often been asserted that punching is nothing more or less than a case of shearing with flat knives. This is erroneous. In shearing, let it be remembered that the flow is absolutely unrestricted by any dies, while with punching the metal surrounding the finished hole acts during the operation, by its resistance to flow, partly as the walls of a die chamber.

In cold shearing the rupture occurs when the bending moment on the bar reaches the resisting moment of the section; while in the case of punching is witnessed the phenomena of a detailed yield of the molecules—the whole process of penetrating through any one thickness being divided, as it were, into periods: the first one representing the resistance to rupture of a certain portion of the thickness, this to be succeeded by a following one where the resistance has become still greater—the line of resistance continuously rising until the maximum is passed, after which it very quickly decreases—in quite marked contrast to what exists during the process of shearing, where, as seen by the cards, the heavier resistances are maintained during longer periods, causing diagrams less pointed but more rectangular.

Fig. 4 represents a card taken during the operation of punching six 15-16-inch holes through $\frac{1}{2}$ -inch steel, all tools being square to their axes and all meeting the plate simultaneously.

When it is desired to punch a very large number of holes the tools are divided up into series, each series being then set a little in advance of the following one, so as to make the pressure more uniform throughout the entire stroke.

A typical card of this kind is given by Fig. 5, which represents the operation of punching two holes, each being $22\frac{1}{2}$ inches long by 5 inches wide, as also 23 15-16-inch holes, all through 7-16 inch steel.

The results from a large number of cards on $\frac{3}{8}$ -inch, 7 16-inch and $\frac{1}{2}$ -inch materials are as follows:

Pressure per square inch to punch 70,000 to 75,000 pounds steel varies from 30,000 to 38,000 pounds, depending upon the condition of the punches. Average energy per square inch of severed surfaces equals about 1495 foot-pounds, the extremes varying about 10 per cent. each side of this figure. It must be noted that all the punches were provided with some shear. The figures as already given refer to a long punch, the end of which has a shear of 11 32 inch to the inch on each side of center.

The general characteristics of this system are a quick, immediate rise in the molecular resistance in a manner more rapid than that of shearing to be followed by one or possibly more intermittent periods of detailed yield of the solid strata which is nearest the punching tool, the resistance being constantly increasing until a maximum is reached more or less quickly, depending upon the degree of tension of the material. This point being passed the resistance quickly decreases until rupture occurs upon the penetration of a distance more or less equal to the full thickness of the material, this depending again upon its degree of tensile strength.

The Third System.

When considering the system of closed dies, these latter can be divided into three divisions or methods of application—namely:

1. All dies to be fixed and stationary, having only the upsetting plunger movable.
2. The surrounding dies to be partly movable and partly stationary.
3. The surrounding dies to be all movable.

In the early history of upsetting materials the first method was the one generally used, and it has been quite commonly adopted even up till to day. Its great trouble lies in the fact that the necessary power to accomplish a certain work is very excessive, with a correspondingly heavy wear and tear of the dies. This necessary power is especially demanded at the end of the stroke when the

dies are to be filled at some point furthest away from the upsetting plunger. When upsetting rounds on square or round bars it is a well-known fact that the power necessary to form a good neck is very great. In all upsetting it is a law that the material will flow near the moving parts, which with this method means near the moving plunger, and the further any stationary part is away from this moving plunger the slower is the material to flow at this point, and the more power does it naturally take to fill the dies at this remote place. If, during the upsetting of a bar by this method, the latter is taken out of the die with the stroke half done, it will be seen that the metal is heavily upset near the plunger, but also that very little work has been done at the neck. Hence a system of dies, Fig. 6, based upon this first division requires a maximum amount of power to accomplish a given work.

There is one application of this method which is in general use to day—to be sure with some additional modified requirements—and represents a case where any other system would appear to be impossible—namely, the operation of riveting. The stationary dies are represented by the plates to be joined together, but the rivet hole must be filled up. An additional requirement lies in the demand for a well filled good rivet head; but the hardest work is after all to fill the hole.

Fig. 7 represents indicator work of $\frac{3}{4}$ and $\frac{1}{2}$ inch rivets. As clearly seen, hardly any work is done during the early part of the stroke, while at the finish the pressure rises very fast. The cards were taken on bridge work and the results in figures, as given below, represent the necessary powers for rivets of great lengths and only fairly matched holes. The total thickness of plates corresponding to the above cards was $1\frac{1}{2}$ inches or more. It is the sliding of the material against the more or less rough surfaces far away from the die holder which requires the great power used in bridge riveting, as compared to boiler work. The average results from a series of cards were as follows:

The power necessary to complete the heads on $\frac{3}{4}$ and $\frac{1}{2}$ inch rivets is about 60 to 70 tons, when working on such grips as mentioned above. The necessary energy in foot pounds for $\frac{3}{4}$ inch rivets is 7200 and for a $\frac{1}{2}$ inch rivet 9500, or as in the proportion to the squares of the diameters.

Better Results with Short Rivets.

With the view of showing the vastly improved results which can be obtained with short rivets and well reamed holes I shall attach some data derived by Mr. Vaulain, superintendent of the Baldwin Locomotive Works on boiler plates. They form part of a discussion delivered before the Engineers' Club of Philadelphia a few years ago and are as follows:

The suitable pressures for well fitted boiler work are: For $\frac{5}{8}$ -inch rivets, 25 tons; for $\frac{3}{4}$ -inch, 33 tons; for $\frac{7}{8}$ -inch, 50 tons; for 1-inch, 66 tons; for $1\frac{1}{8}$ -inch, 75 tons; and for $1\frac{1}{2}$ inch, 100 tons.

It is undoubtedly true that the last pressure is concentrated upon the rivet head, and that hence the diameter of head enters to some extent when having to decide the total amount of power necessary to drive a rivet. But as the standard of rivet heads does not vary very much between the different makers it is thus possible to use the rivet diameters as a basis of computation. Again, the resistance existing along the circumference of the rivet hole, when filled, will certainly be transmitted through the body of the rivet back to the tool holder, independent of that part of the head which is outside of the rivet and forms the collar.

A summing up of this division means an early flow with comparatively small stresses, all concentrated near the moving plunger, this to be followed by rapidly increasing resistances toward the end of the stroke, accompanied by a slow flow at the remote parts.

Movable Dies.

The next step represents the resistance to flow in dies which are partly movable and partly stationary. When entering upon the question of movable dies an entirely new feature is brought into play—namely the upsetting or dragging tendency of the surfaces of the movable parts, outside of the plunger itself. The effect of this is naturally beneficial, especially so if the moving dies extend far toward the stationary neck, causing thus, at this remote point, a flow which means directly that much power saved (as compared to the absolutely stationary method) when the final squeeze or pinch is required. The methods of movable or partly movable dies can be applied to almost any form of upsetting and the principles involved hold good for all. The neck dies are of course always stationary, the semicircular plunger being always movable, while the remaining top or bottom dies will vary according to the system applied. If they were stationary the criticism of the first system has shown the necessary power to be excessive, and the present practice discarded them long ago; but if they are arranged to be stationary on bottom and movable on top the flow of

metal can be best illustrated by Fig. 8, which shows the form of a bar half upset and removed from the machine. The plunger has upset the back part, while the moving top die has dragged the metal along and upset the neck. An indicator card showing the power necessary for this division is shown in Fig. 9.

More work is here done during the early process of the stroke as compared to what existed with the absolutely stationary dies, but even so the final maximum ordinates are very great in proportion to the earlier dimensions.

The summing up of this division means a more uniform flow throughout the stroke, followed by a tendency toward a more even distribution of pressures.

The third and last division, having all movable dies, represents an improvement upon the former two, inasmuch as the dragging tendency of the surrounding dies is here brought into play to the greatest possible extent. Hence the distribution of flow and pressures during any one stroke is more uniform than with the former methods. Again let a bridge eye bar illustrate this assertion. Fig. 10 shows a bar partly upset, and the striking feature of this sketch is the fact that the most remote parts from the plunger or header are the very first parts to upset. An indicator card of this division is represented by Fig. 11, which also shows the great amount of work done dur-

flange $\frac{1}{4}$ -inch thick 70,000 pounds steel, 600 to 740 pounds; pressure per running inch to flange 5 16-inch thick 70,000 pounds steel, 710 to 750 pounds; pressure to edge $\frac{1}{4}$ and 5-16 inch thick 70,000 pounds steel, 2500 to 5800 pounds per running inch.

Whatever variation exists in doing the actual flanging is no doubt due to the variation in the steel, as the material upon which the experiments were made was allowed some latitude both physically and chemically. As to the variation in edging, however, this is mainly due to the difference in radius of curves and general shape of work.

When flanging hot materials it is difficult, if not impossible, to determine the exact pressure per running inch to do the work, because invariably a certain amount of stretch accompanies the process. In fact, in many instances the necessity for doing so determines, in spite of any thickness, the question as to whether the material shall be treated hot or cold. With hot work wrinkling or waving is also a strong factor which has to be considered. A number of experiments were made on some $\frac{1}{4}$, $\frac{7}{16}$ and $\frac{1}{2}$ inch plates, all heated to a bright red, and the resulting figures were as follows:

The pressure necessary to bend the plate and commence the actual flanging varies from 185 pounds per

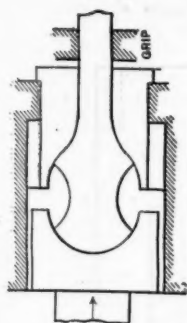


Fig. 8.—Die Movable on Top, Stationary on Bottom.

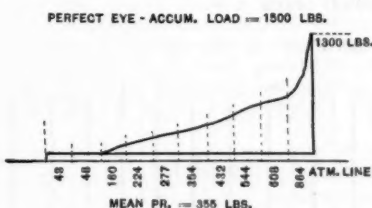


Fig. 9.—Card with Fig. 8.

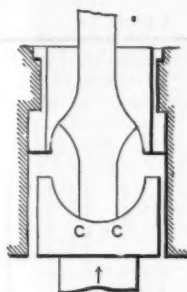


Fig. 10.—Bar Partly Upset.

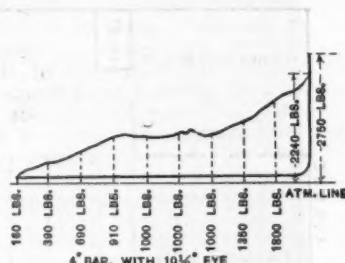


Fig. 11.—Card from Fig. 10.

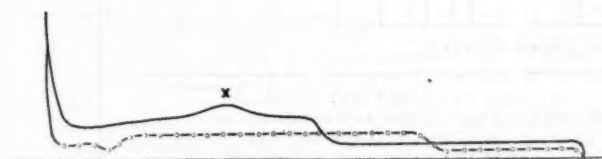


Fig. 12.—Cold Flanging Card.

THE FLOW OF STEEL.

ing the early stages as compared to the two former methods.

This third division represents undoubtedly the ideal manner of upsetting materials, and while it has hitherto been applied only to a limited extent, I think such has been due entirely to a want of knowledge of the general flow of metals. The very fact that a result can be obtained by this construction with very much less power than by any other method—and also that offsets, far away from the upsetting plunger, can be filled with a degree of sharpness obtainable with no other system—ought to be enough to insure its action.

Flanging.

One more important branch of this third system is represented by the process of flanging. The great majority of work of this kind, if heavy, is preferably done under the hydraulic press instead of under the hammer, and the application of flanged work is daily becoming more and more general, superseding riveted or cast sections wherever at all possible. The general work can be divided into two classes—namely, hot and cold flanging. Cold flanging is generally confined to the thinner sizes, 5 16 or $\frac{3}{8}$ inch being the greatest dimensions usually considered safe to be so treated. In all flanging the greatest effort is to edge the plate—that is, to sharpen the corners or bends and take out wrinkles.

Fig. 12 shows a typical indicator diagram of the flanging of the center part, about 17 feet in length, of a sill for a steel car. The material was 5 16 inch in thickness and the body of the sill was channel shaped, having a flange at top and bottom. A number of cards have been taken from cold work and the average results can be summed up as follows: Pressure per running inch to

running inch for $\frac{1}{4}$ -inch material up to 380 pounds for $\frac{1}{2}$ -inch.

The pressure necessary to complete the flange and sharpen corners varies from 2100 pounds per running inch for $\frac{1}{4}$ inch material up to 2700 pounds for the larger thicknesses, depending greatly, as a matter of course, upon the temperature of the plate.

The pressure necessary to remove waves or wrinkles on a flanged surface equals about 1400 pounds per square inch of waved surface. The latter represents such cases where the wrinkles are not of exceptionally heavy amplitude. The middle figures—namely, 2100 to 2700—contain also the power necessary to overcome a certain amount of stretch incident to the process.

The energy consumed in flanging $\frac{1}{4}$ and $\frac{3}{8}$ inch hot steel plates was found as follows:

For $\frac{1}{4}$ -inch material, 100 foot pounds per running inch or 400 foot-pounds per square inch; for $\frac{3}{8}$ -inch plates, 360 foot pounds per running inch or 945 foot pounds per square inch.

Summing up the general features of the third system we find the resistance to flow as being very gradual in their increase—commencing at zero—and following a line of increments which, toward the final end of its stroke, rises more or less rapidly, depending upon the amount of movable surfaces inclosing the materials to be treated. The metal flows exclusively in the line of pressure, only changing its direction when the motion becomes impeded by meeting a stationary surface, more or less perpendicular to the line of flow.

This constitutes about the limit to the field upon which the speaker has experimented. There are unquestionably some other directions into which the flow of metal enters and which are of importance to the engineer; as, for instance, the reduction of metal when compressed between a pair of revolving rolls. But I think, nevertheless, that the different processes mentioned in this paper will cover most of the branches of the mechanic arts in which the designing engineer is interested when pursuing his profession.

In view of the American exposition of agricultural machinery to be held in Moscow in 1901, the German Industrial League has addressed a circular letter to the German manufacturers of agricultural machinery pointing out the danger to their export business and proposing an exposition of German machinery in Russia this year. A large number of manufacturers are said to have already agreed to join in the project.

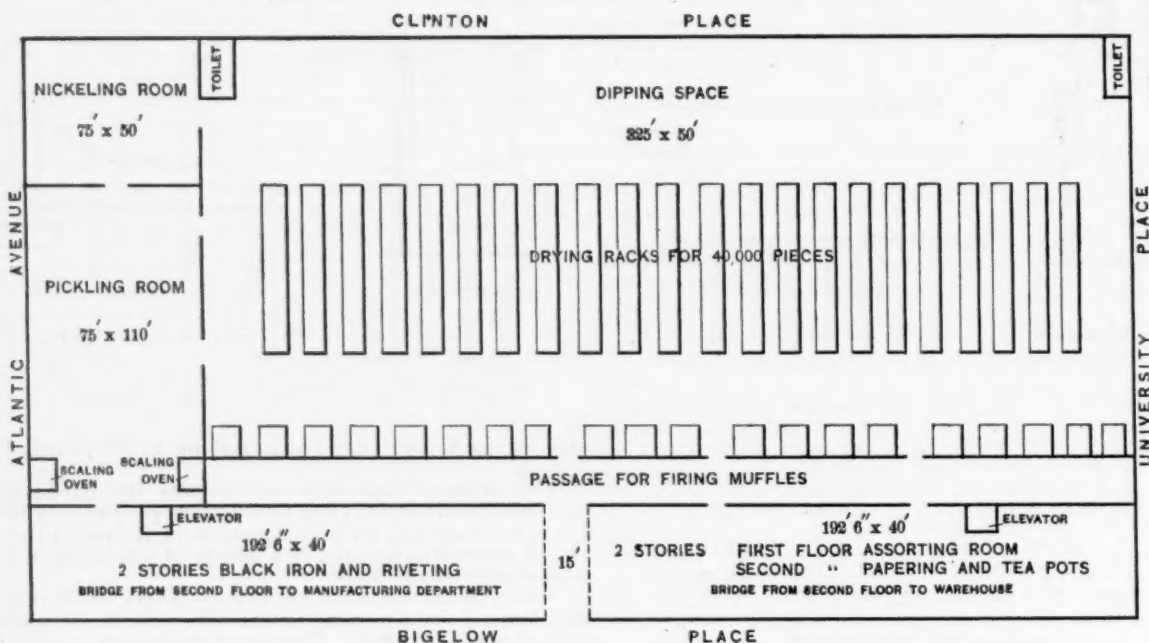
A Fine Enameled Ware Plant.

For some time prior to the beginning of last year it had become increasingly evident to the Lalance & Grosjean Mfg. Company of New York that their manufacturing capacity for enameled ware at the big factory at Woodhaven, L. I., immense as it is, was becoming totally inadequate to meet the rapid growth in the demand for this class of goods. The revival of prosperity throughout this country and the expansion of their trade in foreign markets called for a constantly increasing supply of the company's enameled wares, until, at the beginning of last year, they were confronted with the positive necessity for a radical and prompt extension of their facilities for production, if they were to cope in any satisfactory degree with the current requirements of their customers. Consequently it was decided that an entirely new factory, to be devoted exclusively to the manufacture of enameled ware, should be erected on the block immediately adjoining the company's large group of factory buildings on the east side.

The contract for the new buildings was given out in the middle of March, and the work on them began forthwith and was pushed actively until, at the end of October, the factory was in a condition for the inauguration of operations. While not yet entirely completed, so

at either end of the building, serve to carry the unfinished ware down and the finished goods up. The system followed throughout the factory is progressive; no back steps are taken by the goods in the process of manufacture. They come in as black iron articles at one end, go forward through the several processes, and emerge at the other end as finished enameled ware, ready for boxing and shipment. On the second floor, along the outer wall, is a row of benches, at which workmen are employed in putting the handles onto kettles, pots, and other goods that require these appurtenances.

Following the black iron goods as they descend in the elevator at the north end to the ground floor, we find them run on cradles through a large scaling oven located in front of the elevator. Having been in the oven merely long enough to remove any scale or grease that may have remained on them after the stamping process, the goods issue directly into the pickling room, which occupies a space 75 x 110 feet at the north end of the single story building. Here are located the pickling tanks in which the articles are immersed, after which they are placed for a brief space for drying on the top of a row of covered brick ovens ranged between the pickling and enameling rooms. After scrubbing and a careful examination to see if they have any impurities or defects that would prevent the enamel ad-



Ground Plan of New Factory of Lalance & Grosjean Mfg. Company.

A FINE ENAMELED WARE PLANT.

far as the equipment of ovens is concerned, the establishment has been for the past two months in steady operation, each week seeing a larger volume of output. Before the end of the current month it will be in full work, giving the Lalance & Grosjean Mfg. Company a potential producing capacity of 125,000 pieces of enameled ware a day.

The new building, of which the ground plan is presented herewith, occupies an area of 200 x 400 feet, continuing the company's immense establishment so that it now covers a total space 1200 x 400 feet, lying parallel to the tracks of the Long Island Railroad. At the west end the building is carried up three stories over a space 40 x 400 feet, the remainder of the structure, 160 x 400 feet, being of one story. The entire building is of brick, with steel frame work, and is made as nearly fire proof as possible. The two upper stories at the west end of the structure are connected with the main building adjoining by two double covered bridges, one at either end. These bridges are of metal construction, the sides and roofs being of corrugated sheet iron. Through the bridges at the north end are brought in, on light trucks, the black iron articles which have been stamped and formed up on the corresponding floors of the old factory. These are stored on the second and third floors until needed for treatment in the enameling shop below. After passing through all the processes necessary for transforming them into enameled ware, they are sent out into the assorting and packing rooms in the old factory over the bridges at the south end of the building. Two elevators, operated by hydraulic power and located one

herring to the metal, the articles are passed over to the coaters for dipping in the enameling pots.

If, however, the articles are destined to become Agate nickel-steel ware, the highest grade of enameled goods made by the Lalance & Grosjean Company, they are first transferred to the nickel plating room to be treated. This department, which is located at the northeast corner of the building, occupies a space of 75 x 50 feet and contains one of the finest nickel plating equipments in the country, consisting of ten tanks 16 x 5 feet in size, operated by two large dynamos. Here the goods receive a coating of nickel, which obviates the use of lead, arsenic or antimony.

A small army of women and girls is employed at the east side of the long 325 x 160 foot room, dipping the smaller articles into the enamel preparation. The larger goods are handled by men. After being dipped they are transferred to the drying racks, 22 in number, which occupy the middle section of the room and have a capacity of 40,000 pieces at a time. When dry the goods are transferred on cradles to the "mufflers," or ovens, to be fired. This operation consumes from 5 to 7 minutes. They emerge at a white heat and are allowed to cool, when they are redipped and again fired. The final coating gives a gloss and hardness to the ware, enabling it to resist all kinds of acids. After the final firing the goods, when cooled off, are ready for transfer to the assorting and packing rooms in the old factory over the bridges at the south end of the building. Two elevators, operated by hydraulic power and located one

The firing muffles, 20 in number, which are ranged along the west side of the room, have about twice the capacity of the old muffles located in the main factory building. With the latter the goods are handled manually, but with the new ovens a special patented apparatus of ingenious design, in the nature of a traveling crane, is used to convey the goods into the oven and withdraw them from it. The muffles are heated, as are all furnaces on the works, with crude oil, pumped in from immense oil reservoirs located at the extreme west end of the company's plant. The necessary draft is supplied by compressed air brought in by pipes from the compression plant in the old factory. The use of oil fuel has been found very satisfactory in the experience of the company. Time and labor are saved and absence of dirt and dust is secured, while the fires can be instantly lighted or extinguished. This fact contributes to the remarkable cleanliness of the enameling shop and the absence of smoke and dirt in the atmosphere. Moreover, each oven is connected by underground flues with a large steel chimney located in the center of the building, so that no smoke or vapor is allowed to escape into the shop. The single story portion of the factory is covered by a triple peaked roof, provided with skylights and well ventilated, so that light as well as a clear atmosphere is provided. The floor under the ovens and drying racks is of concrete, but a wooden flooring is provided for the coating section, with a view to the comfort of the women and girls.

In connection with the hydraulic elevators, the waste water is conveyed into a tank for use throughout the building, in the pickling room, water closets, &c. From thence it passes into the company's own sewer, which connects with the sewage system of the city of Brooklyn, a mile and a half away. Toilet rooms are provided at either end of the building for the men and women respectively. The entire factory is lighted throughout by electricity.

The new enameling department is run steadily day and night, with different shifts of workers, operations being only suspended for 18 hours on Sunday. Meanwhile the enameling facilities in the old factory are also kept in operation as before. The new capacity is entirely supplementary.

The C. & H. Reversible Electric Controller.

An illustration is herewith given of the C. & H. reversible controller for electric cranes and hoists which has been brought out by the Cutler-Hammer Mfg. Company, Milwaukee, Wis. In operating electric cranes it is customary to use three motors. The largest of these motors is generally used for the hoists, the next largest for the travel of the carriage or the crane itself, and the smallest for the cross travel of the block upon the carriage. In selecting the three controllers necessary, they should be built in accordance with the work which they are to be called upon to perform. The operation of the hoist is an entirely different problem from that of moving the crane itself or the block upon the crane. The hoist must operate under great variations of load and speed, while the load upon the motors which move the carriage or block never varies to such a great extent as the first and they always have a considerable load to drive.

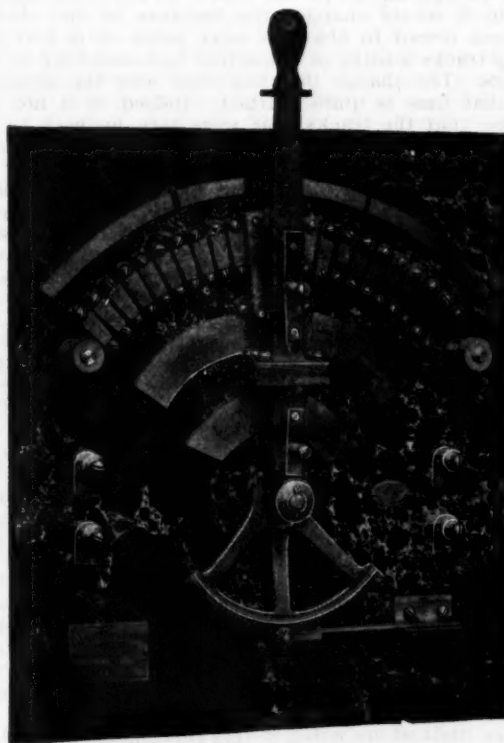
In designing this controller for the hoist the manufacturers have incorporated the following features: They obtain a variation of speed from full speed to less than 10 per cent. of full speed, so slow, in fact, that one can hardly see the hoisting block move, and this speed variation is obtained absolutely independent of the load which may be upon the hoist. The same feature by which they obtain these excessively slow speeds enables the motor to hold back a heavy load in lowering without the use of any mechanical brake. Absolute control of speed and load is obtained by the use of the single lever shown in the cut. The resistance used in these controllers is exceedingly compact, and has the very important feature of maintaining a practically constant resistance under various degrees of temperature. This feature will insure the controller operating just as well after being worked hard for some time as at the start. The resistance part of the controller is extremely light and occupies but very little room in the car. The electrical contacts are all made easily renewable, and the sparking is reduced to a minimum.

As an extra precaution in case of failure of the current, they recommend a band brake released by a solenoid, but do not call upon this brake to act until the motor has already been stopped by the controller itself. A practical advantage which the slow speed feature possesses is realized in lifting patterns from the sand easily without jerk, the value of which will easily be appreciated by any foundryman. In building the controllers for the travel of the carriage and block, they do not incorporate the slow speed features, as there is always sufficient load on the motors to control their speed by

means of ordinary resistance methods. It is frequently desirable to operate crane controllers by means of ropes hanging from the carriage and reaching within 5 or 6 feet of the ground. In such cases as this it is absolutely necessary to have some kind of a retarding motion. Otherwise, the operator is almost sure to cut out all the resistance of the rheostat with one quick pull of the rope.

The Duty on Metallic Packing.

In the case of the protest of the Duval Metallic Packing Company, the Board of Appraisers has rendered the following decision: The merchandise in question consists of metallic packing, returned by the appraiser as "manufactured tin coated brass wire, not specially provided for, 45 per cent. and 1¼ cents pound, wire 20 mm. thick." The wire contained in the article was valued at over 4 cents per pound, and the collector assessed duty



THE C. & H. REVERSIBLE ELECTRIC CONTROLLER.

thereon at the rate of 45 per cent. ad valorem, under paragraph 137 of the act of July, 1897, and 1¼ cents per pound additional as an article manufactured from wire, under the last proviso in said paragraph. The importer claims that said merchandise is dutiable at the rate of 45 per cent. ad valorem under paragraph 193 of said act, which reads as follows:

"Articles or wares not specially provided for in this act, composed wholly or in part of iron, steel, lead, copper, nickel, pewter, zinc, gold, silver, platinum, aluminum or other metal, and whether partly or wholly manufactured, 45 per centum ad valorem."

These articles are indisputably made of tin coated brass wire, of the size and value reported by the appraiser, and are specifically provided for in paragraph 137, under which they were assessed.

The pertinent provisions of paragraph 137 are as follows:

"Iron or steel or other wire not specially provided for in this act, . . . valued at more than 4 cents per pound, 45 per centum ad valorem: *Provided*, That articles manufactured from iron, steel, brass, or copper wire, shall pay the rate of duty imposed upon the wire used in the manufacture of such articles, and in addition thereto 1 and 1¼ cents per pound."

We hold that the provision in this paragraph is more specific than that in paragraph 193, invoked by the importer, and the rate of duty on the wire used in the manufacture of the article being under this paragraph 45 per cent., and on the article as a manufactured article 1¼ cents per pound in addition thereto, the assessment of duty was correct, and we accordingly overrule the protests and affirm the decision of the collector.

Information Wanted.—Who produces machinery for turning out grindstones?

Lake Iron Ore Matters.

Railroad Movements.

DULUTH, Minn., February 10, 1900.—The absorption of the Escanaba & Superior Railway by the Chicago, Milwaukee & St. Paul in the past week will add another to the heavy lines interested in iron ore traffic. For years the Milwaukee has had lines to some Menominee mines, but it has turned its traffic over to the Sault line, which had docks at Gladstone, and has not profited to any great extent by the business. With the purchase of the Escanaba road, the construction of docks, &c., at Wells, where there is a fine harbor, and the extension of the road through the Menominee mining region, the road will be in a position to take a share of the tremendous traffic of the range. Your correspondent about a year ago heard A. J. Earling, then traffic manager and now president of the Milwaukee system, state on the stand under examination that the road had never received enough out of its ore traffic to pay, and that, if possible, it would abandon the business, in fact that it had been forced to abandon some parts of it and had torn up tracks leading to mines that had once been active shippers. The change that has come over the situation since that time is quite marked. Indeed, it is not improbable that the tracks that were torn up may be replaced, owing to the opening of new deposits near those that were then worked out and discarded.

The matter of rail connections to ore mines has been further emphasized the past week by the dispatch of engineering crews by the Eastern Railway of Minnesota to the Mesaba range, to complete surveys for a line paralleling the Duluth, Missabe & Northern for 50 miles of its course. The Eastern's ore traffic is now carried in a semicircle of 140 miles from its most distant mine, the Saunty, to its docks, against a straight away course of 70 miles for the Missabe line from the same point. The new line, which is to be built as soon as possible, and will be ready by 1901, will reduce distance by 36 miles. The Eastern is handicapped by a haul to docks on the wrong side of the head of the lake harbor, and cannot give as short service as its competitors without removing its docks to a better location, and this it does not expect to do. But that it has plans for a very marked increase of its ore traffic is evident, not only from this move, but from actions it has taken all along the line.

The double tracking of the entire main line of the Duluth & Iron Range road from the Mesaba range will be completed by spring, and is an important evidence of what it expects. Both this road and the Missabe are making arrangements for reaching new mines, and are building spurs and connections that will add materially to their tonnages.

If the finds of ore noted in this correspondence of late on the west Marquette range are satisfactory, and that they are the latest information seems to promise, there will be extensions of the Marquette roads. Indeed the Duluth, South Shore & Atlantic has now let contracts for the extension of its line from the copper country to Lake Gogebic, and can thus easily reach some of the late developments.

In the Gogebic Range.

About all the little properties of the Gogebic, in the neighborhood of the Comet and Puritan, have been taken by Corrigan, McKinney & Co., and considerable work is under way in exploring. At the Jackpot the Pittsburgh & Lake Angeline Company are exploring with success sufficient to encourage them in the belief that they have a good shipper. The stock piles at the Norrie and its group, at Atlantic, Tilden, Brotherton and others, are very large and are growing with astonishing rapidity. That the coming season will show some increased shipments on this range there is good evidence. The Ashland Iron & Steel Company, operating Hinkle Furnace, have secured control of one of the Colby properties, from which a large part of their ore can be taken. It is quite probable that with this purchase and the installation of the Zwilling carbonization plant, a final test of which was made Tuesday, the company may enlarge their capacity.

On the Menominee Range.

On the Menominee the Oliver (Carnegie) Company have secured a lot of lands of the Lake Superior Ship Canal Company in the vicinity of Iron Mountain, where Assistant Superintendent Gilchrist is now directing explorations. The effort will be to find a defined mineral vein, in a formation where ore of good quality existing in bunches has been frequently found by drill and in other ways, but where the formation has not yet been determined. The work of the Oliver Company will be thorough and extensive. On the same range, near Iron River town, the company are busy changing the course of the river, getting it away from their Miller, Riverton

and Dober mines. A channel 40 feet wide and 2300 feet long is being made, and later dykes and dams will be added. At Crystal Falls the 40 north of the Hilltop has been found to contain much ore and is being extensively developed by Captain Roberts. It has lately been under option to F. Schlesinger of Milwaukee. Now that work has recommenced at the Hiawatha it is being energetically prosecuted. Cole & McDonald, diamond drill contractors, of Duluth, are working on some of the Houghton County lands on the Menominee and with good indications.

The Marquette Range.

Two more old mines of the Marquette have been taken by the Oliver Company, these being the Taylor and Sampson. The latter adjoins the old Humboldt, where there is talk of revival under a strong company, and its ore is like that of Humboldt. The Sampson never has shown much ore, and a shaft once sunk following a drill hole was valueless, as the drill had gone down in a small chimney of ore. The Taylor has been idle since 1881, when it was reported exhausted. There are hopes of getting new ore on its lands. Its ore is of low grade. Both these properties, as well as others that are looking well, are considerably to the west of anything that has been done successfully on the range, extending nearly to L'Anse. In the past few weeks much land in this immediate vicinity has been taken under option. On what is known as the "north range," where the only actual operation is the Dexter, both the Oliver and Federal interests have secured lands and are about to explore extensively. The former will have several crews and some drills at work by spring, and will make a systematic search of the field. Both hard and soft ores, Bessemer to some extent, and hematite and magnetite, have been found here in pockets. At section 12, near Negaunee, the American Steel & Wire Company have stopped work, having found nothing. At the Michigan mine the water is below the wider part of the mine, more than 300 feet down. The mine is 1200 feet deep, and its unwatering is a heavy undertaking. A shaft, to be 800 feet deep, has been started this week by the Oliver company at the Hartford mine, after such thorough drill exploration that the company know just what they are doing. Pumps are working at the Beaufort, and mining will commence early next month.

The annual meeting of the Lake Superior Consolidated Iron Mines and allied corporations was held at Duluth last week, resulting in no change of management. W. J. Olcott, who has managed these properties since the Rockefeller interests took control, remains in charge. Mr. Rockefeller has been noted for his success in placing his interests in the hands of remarkably competent men, and the choice of Mr. Olcott as superintendent of mines for this great company was no exception to the rule. He not only holds this responsible position, but is head of the Duluth, Missabe & Northern Railroad, another tremendous responsibility, considering the nature of the traffic and its vast amount.

The annual meeting of the great independent mining company, the Cliffs, will be held the 14th inst. in Cleveland.

An eighth interest in Mahoning Ore & Steel Company's mine and extensive undeveloped mineral lands, that had been expected to go to the American Steel Hoop Company, has been bought by Hanna & Co., Cleveland. It belonged to Andrews Bros., who, when they sold their plants to the Republic, retained this ore interest.

D. E. W.

A Secretary of Mines and Mining.

A new Cabinet officer, to be known as the Secretary of Mines and Mining, is provided for in a bill favorably acted on this week by the House Committee on Mines and Mining. The bill, which was introduced by Representative Barham of California, creates an executive department which shall have entire charge of affairs relating to mines, including the Geological Survey. The Secretary is to have the same rank and salary as other Cabinet officers, and an Assistant Secretary is to have the same standing as the First Assistant Secretary of the Interior.

Another mining measure favorably acted on establishes mining experiment stations in each of the mining States, similar to agricultural experiment stations, and provides for the appointment of a Government geologist at \$3500 a year and an assayer at \$2500 in the mining States. These officers are to furnish assays, issue public bulletins and conduct explorations of mining regions.

Owing to delay in deliveries of steel, work at the Washington Navy Yard has been considerably impeded. A number of employees have been laid off indefinitely in consequence.

Canadian News.

New Iron and Steel Projects.

TORONTO, February 12, 1900.—Notice has been given in the official *Gazette* that application will be made to the Governor-General in Council for a charter of incorporation by letters patent of the Ironsides Mining Company. The purposes are to acquire mineral lands in Quebec Province and elsewhere in Canada and to work and develop the same, to explore for ores, &c., and to mine and melt such ores. Ottawa is to be the chief place of business. One hundred thousand dollars is to be the capital. The applicants are Wm. L. Holmes, banker, Detroit; Jos. L. Robertson, banker, New York; Wm. R. Hinsdale, mining engineer, New York; John O. Hubbard, agent, Ottawa; Chas. B. Hibbard, contractor, Ottawa; D'Arcy Scott, barrister, Ottawa; Wm. H. Curle, barrister, Ottawa.

Notice is also given that application will be made at the present session of the Dominion Parliament for an act to incorporate the Canadian Steel Company to manufacture iron and steel and do everything else necessary for the carrying on of such business upon the largest scale. The operations of the company, it is specified, are to be carried on at or near Welland, on the Welland Canal. D'Arcy Scott is the solicitor for the applicants, as he is also for those seeking incorporation as the Ironsides Mining Company, and it is presumed they are mainly the same persons in both cases.

Reference has been made in these columns before to a project for beginning productive operations again in the iron mines at Ironsides, in Quebec, very close to Ottawa City. The scheme, it was shown, included a plan of smelting the ore in a furnace on the Welland Canal, and possibly in one at Ottawa. As shown above the parties are organizing themselves into companies to work the mines at Ironsides and to smelt the ore on the Welland Canal. But the idea of manufacturing at Ottawa is also adhered to. A few days ago E. A. C. Pew of Toronto, E. M. Butz of Pittsburgh and J. H. Hardebeck of Lockport, N. Y., representing the Canadian Steel Company, waited on the Industrial Committee of the Ottawa city council with a proposition to establish large smelting works in Ottawa. A sub-committee was appointed to make further inquiries concerning the proposition and obtain from the promoters a definite memorandum, defining the concessions they want and specifying the magnitude of the proposed works and the conditions under which they would agree to operate them.

Mr. Pew said he had made arrangements to work one furnace at Welland and had in view the working of another at Port Arthur. Welland is making application for power to grant the works exemption from taxation for 20 years. Mr. Butz said the plant would cost between \$4,000,000 and \$5,000,000.

The same parties have recently laid before the Dominion Government representations in favor of continuing the present arrangements for protecting the home manufacture of pig iron and steel.

Progress at Sydney.

H. F. McDougall, M. P. for Cape Breton County, Nova Scotia, has been speaking of the headway made in Sydney. He has paid weekly visits to the spot where the iron and steel works are being constructed for the last few months. Fine weather has greatly facilitated building operations, and Mr. McDougall believes that the company will be turning out pig iron before next July. As to the iron and steel works which have for some time been talked of in connection with the other town of North Sydney, Mr. McDougall thinks they also will soon be an accomplished fact. He considers there is room for two great steel plants in Cape Breton. The General Mining Association's areas, which he thinks will probably become the property of the Nova Scotia Steel Company, have the reputation of producing the best coal. He says the population of Sydney has more than doubled since May last, and now numbers 8000 to 10,000. Sydney, he adds, buys its material chiefly from Montreal, Quebec and Toronto.

Ontario Mineral Production.

Full returns of the mineral production of Ontario for the calendar year 1899 have been received by the Bureau of Mines here. The quantity of nickel and copper ore mined was nearly 200,000 tons, and the value of nickel and copper in the matte smelted was about \$692,000. In 1898 it was \$782,300. The quantity of pig iron produced was 64,750 tons, valued at \$808,000, as against 47,254 tons in 1898, valued at \$530,790.

Trade Items.

Application has been made to Parliament for the incorporation of the Letang Hardware Company to do business in Montreal. The capital is to be \$99,900.

The E. B. Eddy Company have awarded the contract for electric motors for operating their factories in Hull to

Ahearn & Soper, Canadian representatives of the Westinghouse Electric & Mfg. Company. The contract is a large one covering a number of motors of various sizes, all of the Tesla type.

Application is being made by the Nova Scotia Steel Company for an amendment to their act of incorporation so as to empower the company to transfer in any manner the whole or part of their property, rights, &c., and to accept payment in cash or in capital stock of another company. This is believed to be in preparation for the amalgamation of the Nova Scotia Steel Company with the General Mining Association.

John Paterson, Hamilton, the promoter and organizer of the Nickel Steel Company of Canada, says that plans for the company's works are being drawn up by the Wellman & Seaver Engineering Company of Cleveland. On this plan the buildings and plant would cost \$6,000,000. The grounds under option are 480 acres in extent. The projected output is 2400 tons of nickel steel plates and billets per day. The refining works, he says, are to cover 6 acres and to cost nearly \$1,000,000. Already \$200,000 has been expended on them. The refining works in question are those of the Hoepfner Company.

The Canada Inland Transportation Company, who are to establish shipyards and build a line of steel vessels, are applying for an amendment to their incorporating act to enable them to increase their capital stock, to change their head office and to acquire stock in other companies. This is understood to be preliminary to fusion with the Connors syndicate, which has recently got big concessions as a grain carrier in the port of Montreal.

Hon. E. J. Davis, Commissioner of Crown Lands for Ontario, heard arguments on the 8th inst. between the Eley Mining Company and F. H. Clergue, who dispute with each other the ownership of a strip of land containing a valuable deposit of iron on Lake Boyer, in the Michipicoton district. Two American lawyers were present on behalf of the mining company.

Notice is given that the Orford Copper Company of New York will apply for the passage of an act at this session of the Dominion Parliament to authorize the Commissioner of Patents to receive the partial fee and to revive, confirm and extend the time of duration of certain letters patent of invention (No. 44,723) granted in November, 1893, for improvements in the process of manufacturing nickel.

C. A. C. J.

A statement issued by the War Department shows that the total value of imports into the island of Porto Rico from the date of American occupation to December 31, 1899, was \$12,191,829, and that the total value of exports from the island in the same period was \$11,696,807. Of these amounts the United States furnished \$4,687,826 of the imports and took \$3,502,766 of the exports, including nearly \$2,000,000 worth of sugar.

An important bill was passed by the House of Representatives on Monday which makes universally applicable the law that now permits the transit of goods in bond through certain ports of the United States. Under its provisions goods in bond can be shipped through any port of the territory of the United States to foreign ports. The bill is principally designed to give the transportation companies of the United States a share of the trans-continental trade to the Orient.

United States Consul-General Stowe, at Cape Town, in a report to the Bureau of Foreign Commerce advises American manufacturers that as soon as the war in South Africa is over there will be a boom which will afford many opportunities for the introduction of American goods and American enterprises. The country will be short of supplies, and, in addition to food stuffs, machinery, tools, vehicles, &c., will be required in large volume.

The fire loss of the United States and Canada for January, 1900, amounted, according to the *New York Journal of Commerce*, to \$11,755,300, as compared with \$10,718,000 in January, 1899, and \$9,472,500 in January, 1898. Last month's fires were small, as a rule, but very numerous.

Writing from Odessa, Russia, United States Consul Heenan warns Americans against attempting to do an indiscriminate business in that country. He says the Russian Government always pays promptly, but discrimination, patience and long credits are needed in dealing with the business element.

The Shiffler Bridge Company, with works in Pittsburgh and West Homestead, Pa., have given their employees a 10 per cent. advance in wages and reduced the working hours from ten to nine hours per day.

Central Pennsylvania News.

HARRISBURG, PA., February 12, 1900.—There is still more or less halting in the iron and steel trade in this territory. It is undeniably true that certain of the manufacturers are timid to an extent which the more conservative men in the business think is not justified by the real situation. The great jump forward last year has caused a slight reaction, which will doubtless be overcome with the natural impulse of activity in the iron and steel industry on the approach of spring. There is still some trouble on account of coke shortage, but there has been an improvement in the supply of coal.

During the last week local industrial circles have been much exercised over the rumors concerning the sale of the Maryland plant of the Pennsylvania Steel Company and of certain large extensions of the plant at Steelton. All the officials of the company persist in declaring that there is absolutely no foundation for the alleged Frick deal and that the proposed extensions at Steelton have been much exaggerated. It is a fact, however, that the company are acquiring much additional land east of and contiguous to the present property at Steelton. There is already under way the erection of a large building for the frog, switch and signal department, which is already the largest plant of the kind in the world. This department has been so crowded with orders that contracts taken six months ago are only now being filled. The new building will be very large and equipped in the most modern fashion. Options have been taken on several pieces of farm land adjoining the present property of the company, and other additions will follow the new frog, switch and signal department. Plans and specifications for the new office building of the company at Steelton are about completed.

Edgar C. Felton, president of the Pennsylvania Steel Company, sailed for Cuba Saturday to look after the company's ore interests on the island.

S. S. Martin, superintendent of the Bessemer department at Sparrow's Point, was at the Steelton works this week and reported business at the Maryland plant very active. Two new torpedo boats are about ready to launch and orders have been booked for three new colliers.

The Harrisburg Pipe & Pipe Bending Company will not be ready to operate the new pipe mill before about the middle of May. Meanwhile the pipe bending department is crowded with orders for pipe coils and there is plenty of work ahead. The company have had many foreign inquiries recently, but are giving almost exclusive attention to the needs of the domestic market.

The Middletown plant of the National Tube Company is in partial operation, certain departments being idle. It is understood that other mills of the company in other sections of the country are idle.

It is understood that negotiations for the purchase of the Herr street mill of the Central Iron & Steel Company by the Pennsylvania Railroad Company have about been closed and that the property will soon be transferred to the railroad company, who will utilize the site for additional tracks. This mill has been producing muck bars, and was idle for some months until the activity in the trade last year made it profitable to resume operations. It is reported that the Central Iron & Steel Company will relocate the mill at a point nearer the main plant in South Harrisburg. The railroad company contemplate an addition of not less than 15 tracks and important changes in the interlocking switch system in the main yards at this point.

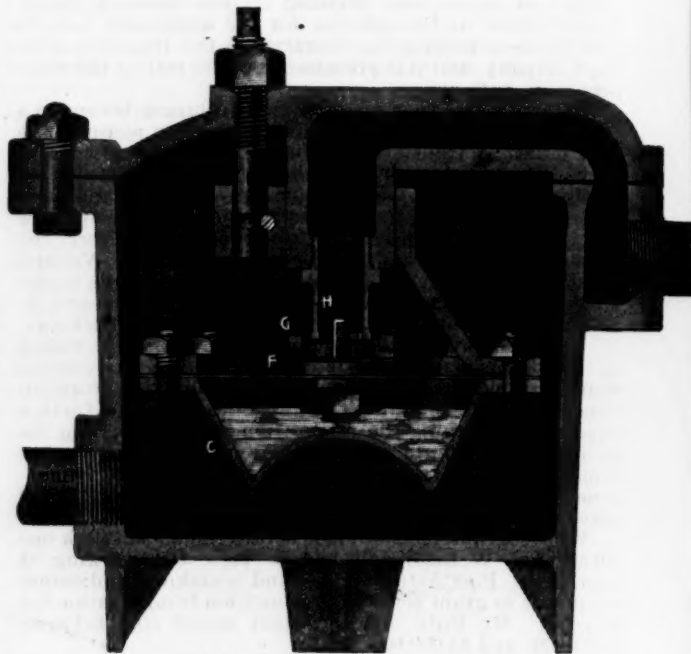
Four new furnaces are being added to the Lochiel rolling mill plant.

We notice in *The Daily Irontonian* that the wire mill of the Kelly Nail & Iron Company of Ironton, Ohio, is having a continued run of prosperous times and that the output has steadily increased from 60 to 115 tons per day, and that by the aid of additional power they expect to increase the same to 125 tons per day. This mill was built and installed complete by the Turner, Vaughn & Taylor Company of Cuyahoga Falls, Ohio, who have a special line for the drawing, tinning and galvanizing of wire, and who equip mills ranging in capacities from 10 to 500 tons per day, as required, in nail wire, fence wire or market wire. They also have a special line of machinery for winding and cutting cold links for welded chain, and special gathering blow hammers for welding chain in dies that form a true shape to the link.

A press dispatch from Humboldt, Mich., under date of February 4, states that the Carnegie Steel Company, Limited, of Pittsburgh, have bought the Sampson iron mine, near that place. It was last worked nine years ago, and will be reopened with a large force of men.

The Bayley Automatic Steam Trap.

The Bayley automatic steam trap has been placed on the market by the W. Bayley & Sons Company, Milwaukee, Wis. It is applicable to hot blast heating apparatus, steam coils, steam engine supply pipes and other purposes for which such a device is useful. It is applicable to steam cars and steam ships, as it will automatically discharge the water of condensation, maintaining full steam pressure up to the trap, while its working is not affected by the oscillation of the car or ship. The illustration herewith given is a sectional view showing the interior construction. It is designed so that at starting the valve has a full opening, which allows all the air, water and deposits to be blown out, but closes when the steam enters the trap. When working there is no pressure in the trap body. The principle employed in the trap is the expansion of a fluid which is quite volatile. It is operated by the expansion of the vapor and fluid which are contained in the chamber C. The variations in the pressure of the vapor caused by small changes in the temperature of the water or steam in the trap are considerable. The fluid chamber is closed at the top by a flexible diaphragm of special metal D. The outlet valve



THE BAYLEY AUTOMATIC STEAM TRAP.

G rests upon the valve holder F, which is firmly secured to the center of the diaphragm D. This valve operates to open and close the lower end of the valve tube H. The trap receives water and steam through the inlet pipe L and passage J. The valve G being open, the air, water and deposits are blown out, the steam entering the trap surrounds the chamber C, which contains a fluid, the temperature of the steam generates a pressure in chamber C, forces the diaphragm D and valve G upward, thereby closing the valve. As the pressure decreases in the chamber C the pressure on the valve G forces downward the valve G and the diaphragm D, thereby allowing the water to escape through the valve G, the temperature of the water being sufficient to generate a pressure in the chamber C to balance the downward pressure on the valve G, which allows the water to escape in a continuous discharge through the pipe K. This discharge is the exact quantity that enters the trap.

This trap will raise water any desired height, according to the steam pressure carried. It is made in six sizes, running from 1/2-inch to 2-inch pipe connections.

Secretary Root has transmitted to Congress a plan for improving the Southwest Pass of the Mississippi River, for the purpose of permitting the passage of ocean steamers to New Orleans. It contemplates a channel 1000 feet wide and 35 feet deep at low water, the construction of two jetties, and other work, and an estimated cost of \$6,000,000.

It is reported from St. Petersburg that the construction of the Trans-Persian railway has been absolutely decided upon. The line will be 1300 miles long and will cost about \$90,000,000. The Russian *Viedemosti* says the route will be from Dshulfa, by way of Tabreez, Hamadan, Isphahan and Kerman, to Bander Abbas.

The Increasing Productiveness of Labor, a Result of Invention.*

BY FRANCIS H. RICHARDS.

In former times industrial advancement was a matter of degree; some bullded better than others, but all worked by the same general methods and employed substantially the same means. Now the car of progress runs in new channels. The agencies by means of which advancement is now effected are largely new in kind; invention has come to the rescue of the laborer.

Resources and privileges formerly undreamed of by the laboring classes have become a common inheritance. For instance, from being an exceptional event—a thing permitted to the few—travel has become common. The railroad and the steamship have given people of every race and degree a broader acquaintance with each other, with the natural result of increasing friendship among individuals, communities and nations.

Education, in a broad and true sense, has become equally general, giving the power of advancement to those formerly held in the bondage of ignorance and incapacity. Under such influences competition is becoming less and less a mere struggle for existence, but rather an emulation in the achievement of useful results. A long step has been taken toward the final accomplishment of that ancient command, "Inherit the earth and subdue it." All mankind are naturally qualified in some measure for the gradual development of their faculties and abilities, for that promotion, step by step, from one vocation to another, which has become not merely a privilege but a positive necessity. It is no longer possible, in progressive nations, for the laborer to maintain a *status quo*.

Education properly includes both learning and training, all experience whereby one's powers are extended and disciplined; it continues through life and is not restricted to the period of youth. It has become the duty of every one to learn something more every day. This, perhaps, suggests the true reason for the decadence of the apprentice system—a change which, after all, may be merely the extension of a truer apprenticeship to the whole duration of one's working years.

Not so very long ago all labor was classified as skilled or unskilled. Above the skilled labor zone, on the one side, were the professions, with an impassable gulf between; while below were the peasantry classes, untrained and non-progressive. All this has changed; the wide chasm has been bridged. The laborer, possessing both skill and training, now exercises professional powers; he stands shoulder to shoulder with—in every just sense the equal of—the professional man and the scholar. Professions and trades, handicrafts and vocations, have been multiplied and a new classification of the laborers is necessary. Can we not fairly designate them "professional," "expert," "skilled," "trained," "untrained?"

The march of invention constantly draws the more skillful classes of workers into new fields, and thereby furnishes the opportunity through which the less skillful classes can advance into higher occupations. A new industry necessarily draws operatives from the old and naturally attracts them, first, from the more intelligent and progressive classes of workers. The void thus created is filled by the promotion of those who from want of intelligence, experience or discipline were not available for the new requirements. This process once started must continue down through every grade and class, until all share in the general advancement and until, finally, the idle races of the world—even the barbarian and the savage—shall become enlisted in the industrial armies of civilization.

The practical benefits already resulting from these influences are clearly stated in a recent Connecticut paper, quoting from the *Engineering Magazine*, in an article from which I make a brief abstract:

"Luxuries as well as necessities have been multiplied by invention. By the aid of improved machinery, that which at the beginning of the century was the luxury of the rich is now the comfort of the poor. Assisted by machinery and tools, man's labor now converts the raw materials of nature into the useful, necessary and even in some cases the artistic paraphernalia of civilization with one-third of the exertion formerly necessary.

"Few realize how much we are indebted to the inventor and machine designer for the comforts, luxuries and necessities of our daily life; the loom which weaves our silks, cottons and woollens; the harvesting machine which reaps our corn; the machinery which forms our bricks and mixes our mortar; the printing machine which makes the penny newspaper possible. Our food,

clothing, furniture, literature, all are produced on machinery which it is practically impossible to make or maintain without the modern machine tool."

At no time in history has industrial progress been so rapid or general as since the close of the American Civil War. During this period of only 35 years a revolution has taken place greater in extent and more far reaching in its beneficial effects than was ever accomplished by wars or conquests. Industry and commerce, supplied by invention with new resources, have advanced at a rate hitherto impossible; their forces have grown from mere squads to battalions and armies, in which great numbers of workers of many classes and capacities have been brought from a condition of uncertain employment and destructive competition to an economical and effective co-operation.

Not only has skilled labor become more productive, but unskilled labor has been made more available, through improved machinery and better administrative methods, in carrying on manufactures of nearly every kind. This, indeed, is one of the signal triumphs of this century—the effective utilization of that vast resource which in earlier times went to waste, the energy of the unskilled masses.

Invention, by the creation of new instrumentalities, has opened the door of opportunity; has brought to the homes of the artisan and the peasant advantages formerly beyond the reach of prince or potentate.

If capital is merely the accumulated product of labor, then education and skill are among the highest forms of capital, for they are acquired at the cost of much labor. And, also, the immense fund of inventions already accumulated is a principal item—if not the principal one—of the vast capital now employed in the service of mankind.

Labor in the Cotton Industry.

The secretary of one of the most progressive New England manufacturing companies, George Otis Draper, says, with relation to the efficiency of labor in the cotton industry:

"In spinning the product of the machines has practically doubled in the last 30 years, and the capacity of the operative has not only doubled with the machine, but has trebled or even quadrupled. The improvement has been of such a nature that the increase in speed has been attended with benefit to the product. In weaving the product per operative has easily trebled; it is certain the product per operative in other departments of a cotton mill has at least doubled.

"Formerly a weaver tended but one loom, and that at a moderate speed. To-day weavers on the Northrop looms often tend 24 machines running at a speed nearly double that of the original power looms. In some lines a weaver still tends only one or two looms. In 1895, when the Northrop loom was first introduced, the maximum of an operative on common looms was represented by eight."

Labor in Printing.

In the printing art the progress made is equally remarkable and extends to every department of the business. The telegraph and telephone bring the news with lighting speed from every quarter of the globe; complex mechanisms reduce it to "composition" and turn out the forms for "perfecting" presses, which run off immense editions of newspapers that are quickly distributed by railroads and pneumatic tubes throughout the cities and villages of the land.

During the last decade of this century the type composing machine has finally reached commercial success. Of the leading machine, and the results of its introduction, Phillip T. Dodge, Esq., president of the Mergenthaler Linotype Company of New York, writes thus:

"With reference to Linotype machines about five thousand are in use in America. The machine is wholly automatic in its operations, being controlled by a single operator at the keyboard, and produces ordinarily as much composition as four or five hand compositors, while some operators produce steadily as much matter as six good hand compositors.

"The cost of machine composition varies under different conditions from 25 to 65 per cent. of the cost of hand composition. A net saving of 50 per cent. in the cost of composition is very common.

"The result of the cheapened composition has been a vast increase in the quantity of printing done, with a corresponding increase in the number of men employed, in the demand for presses, paper, ink and other articles entering into the printing business.

"So far as the workmen are concerned, the introduction of the machine has been beneficial. There are as many compositors employed to-day as there were before the introduction of the machine. The average hours of labor have been lessened from 10 to 20 per cent., and the wages paid for these shorter hours are from 10 to 25 per cent. greater than they were in the days of hand composition. In other words, the effect of the machine has

* President's address at the annual meeting of the American Association of Inventors and Manufacturers, Washington, D. C., January 16, 1900.

been to cheapen and increase the amount of printing, to give employment to a greatly increased number of men, and to shorten the hours and increase the wages of the compositors."

The Effect of Modern Explosives.

A well-known engineer and manufacturer of Scranton, Pa., Col. H. M. Boies, president of the Moosic Powder Company, furnishes this statement:

"The consumption of powder in mining has increased during the past 25 years at even a greater ratio than mining itself. Many public works already accomplished would have been commercially impracticable except by the use of powder of a greater power and the ability of manufacturers to furnish it at a less cost. The cost of such grades of powder as are employed, for instance, in coal mining has been very largely reduced. One grade of mining powder sold in 1865 for \$6 a keg; in 1875 it had fallen to less than \$4, and at present it is furnished for \$1.25 a keg, and sometimes even less. Within the past 25 years what are known as "high grade explosives," composed of nitroglycerin and other compositions, have been made by Nobel and others commercially practicable, and have so reduced the time required for great engineering works as to render many of these later projects commercially possible. Otherwise the public must have waited for generations before they could afford such improvements, for instance, as the Croton Aqueduct and the Chicago Drainage Canal. Owing to their great cost no one would have dared undertake such projects under the conditions that formerly existed."

Progress in Envelop Manufacture.

One of the best known envelop manufacturers, William H. Prescott of Rockville, Conn., for more than a quarter of a century at the head of the envelop works of White, Corbin & Co., furnishes an account of the gradual development of the envelop business, from which I make this extract:

"The use of envelops was very limited previous to 1855. About this time Milton G. Puffer of Vernon, Conn., patented a machine performing the work of five girls, as compared with hand labor. This invention was considered a great curiosity and for a few years was very profitable.

"About 1862 George H. Reay of New York made an improvement which gradually superseded the Puffer machine and performed the work of about seven girls.

"Later, about 1866, the Berlin & Jones machine was brought out in New York. It had a device for putting the gum on the sealing flap, did the work neater and better, and performed the work of about ten girls.

"A few years later this machine was largely superseded by the Leader machine, brought out by Lester & Wasley of Norwich, Conn. This machine performed the work of about 20 girls, and is one of the principal machines in use at the present day, although most of the patents thereon have now expired.

"The next envelop machine of note was the Richards invention, which gummed, printed, folded and counted the envelops, delivering these upon a table in completed bunches of 25 envelops, with a band around the bunch. These machines perform the labor of about 30 girls, and are running in the factory of the United States Envelop Company (White, Corbin & Co. department) at the present time.

"The consumption of envelops in the United States amounted in the year 1899 to about 6,000,000,000. The cost of a commercial envelop sold to the jobbing trade in 1860 was \$2.40 per 1000. The same grade—but really a better article and put up in a more attractive manner—is sold to-day for 71 cents per 1000."

The Twist Drill.

A prominent Ohio manufacturer, J. D. Cox, Jr., of the Cleveland Twist Drill Company, manufacturers of twist drills, reamers, milling cutters and other tools of precision, states that:

"Beginning in 1876, the firm with whom I was connected found that with the appliances then used they could make only a very moderate profit. The writer took up the question of improved appliances, as you know, about the year 1880, introducing machines in every department—some of your invention and some of the writer's—the sole object being to reduce the amount of labor and not considering the cost of the machines. The selling price of our class of goods has been reduced more than 60 per cent. during the past 20 years, all of which I can say without hesitation has been accomplished by the introduction of labor saving machines and appliances."

These reports come from gentlemen of wide experience in their respective lines of business. With one exception they are members of this association and all have given attention to the questions involved in this subject. We can, therefore, safely accept their conclusions as being reliable. Their testimony is, in fact, conclusive.

Since the close of our Civil War the productiveness of trained labor in the United States has increased threefold, and this has been accomplished principally by the work of American inventors, encouraged and supported by the American patent system.

The Coshocton Rolling Mill Company.—The Coshocton Rolling Mill Company have commenced operations at their new plant at Coshocton, Ohio. The works consist of two sheet mills and one stand of cold rolls. There is sufficient foundation completed for another finishing mill. Trial heats were rolled Saturday, February 10, and everything worked in a satisfactory manner. It is claimed that the general arrangement of the mills and the superior equipment will effect a great saving in common labor. Exactly six months elapsed from the time the Coshocton Board of Trade signed the agreement with the rolling mill company to the day when sheets were first rolled. The company are now prepared to make prompt shipment of their products, which consist of common and smooth finished steel sheets, their specialty being "Royal Blue" sheets, full cold rolled and guaranteed even color. The mills are well supplied with raw materials, and the varied assortment of sheet bars will insure prompt shipment of any gauge or size within the capacity of the rolls and other equipment. This ranges from No. 16, 32 x 120 inches, to No. 30, 30 x 120 inches, or No. 28, 32 x 144 inches. Blue sheets will be made up to and including 32 x 120 inches.

Martin Fox, president of the Iron Molders' Union of North America, has sent a letter to the House Committee on Labor, who are considering a measure for the restriction of shipping of prison made goods from State to State, protesting against the present conditions in this field. Mr. Fox says that that branch of his trade which includes the manufacture of pots, kettles, skillets, reservoirs, &c., has been practically abandoned to the prison foundries. He states also that the penitentiary at Columbus, Ohio, is turning out 11,000 stoves annually, and other large iron products are being produced at the penitentiaries at Chester, Ill., and Salem, Ore., all of which tends to the detriment of free labor in the foundry trade. The committee are said to be in favor of a change in the present law in the interests of free labor.

Representative Fitzgerald of Massachusetts introduced recently into Congress a resolution calling for the appointment of a commission to investigate the commercial relations of the United States with other countries, with a view to the creation of a national commercial university for the special training of young men for the consular service of the United States.

Robert W. Hanbury, financial secretary of the British Treasury Department, stated last week in the House of Commons that the Government hoped soon to receive a favorable reply from the United States to proposals recently made for establishing a parcels post system between the two countries.

The following committee of the stockholders of the Susquehanna Iron & Steel Company have been appointed to devise means for building a pipe mill: Charles A. Porter, J. Wesley Supplee, John Q. Denney, G. E. Schlegelmilch, W. W. Houston, and Frank G. Paine.

The Marting Iron & Steel Company of Ironton, Ohio, are now the owners of the Alice and Blanche furnaces at Ironton, Ohio. Alice was in blast during 1899, but no pig iron has ever been made at the Blanche Furnace.

The Washington plant of the American Tin Plate Company, at Washington, Pa., which has been idle for some months, will soon be started up.

The Shenango Furnace Company, operating Shenango Furnace, at Sharpsville, Pa., are adding new blowing engines, and will blow in a second stack in a short time.

The American Radiator Company, Chicago, have declared a dividend of 1¼ per cent. on their preferred stock, payable February 15.

Ten more mills of the big Shenango plant of the American Tin Plate Company at New Castle, Pa., were started this week. The whole plant of 30 mills is now in operation.

American Wire Rod Rolling.

Before the last meeting of the Verein Deutscher Eisenhuettenleute, at Duesseldorf, M. Baackes of Cleveland, Ohio, read a paper on "The Development of the Wire Rod Mill," with special reference to the United States.

Mr. Baackes introduces his subject with an historical review, general in its character, referring to the development of the Belgian mill, its modification by the Germans, the Bedson continuous mill, and the modifications by Morgan, Daniels and others. He reviews the improvements of McCallip and work accomplished by William Garrett of Cleveland.

When a number of the Garrett mills had been built a rivalry arose as to which was able to produce the greatest quantity. When one had attained the record this was at once telegraphed to the other works, and these, loath to remain behind, made effort not alone to reach it but to beat it. Economy was not closely scrutinized, the aim being only to attain the highest production. Mr. Baackes says that at that time he repeatedly visited these works and saw piles of scrap; in fact, when things went wrong it occurred that within two or three minutes three, four and even five bars were altogether lost. When it is considered that each of these bars represented a loss of \$1 to \$1.25 it may be appreciated that the rolling mill owners watched this rivalry with mixed feelings. He recalls that in 1886, when in charge of the HP Nail Company, who had a somewhat smaller mill than the others, equipped with less power, he endeavored to reach a production of 100,000 pounds per turn, and in order to attain it promised each workman a new hat. When at last the product of 100,000 pounds was attained he had the pleasure of buying 75 new hats. Still this rivalry had its good points. When a high output had been reached the workmen had to keep it up. Later economy was more closely watched, and scrap was brought back to normal quantity. Toward the end of the 80's an increased consumption of wire nails and of barb wire led to a very heavy inquiry for wire rods. At Joliet there were a number of large wire plants, but not a single rod mill. In 1889 Garrett was called upon to build a mill at the works of the Joliet Steel Company. Guided by past experience and expecting to attain even a higher production, this mill was laid out on a larger scale than all the others. The engines were of colossal proportions for those times, being 4000 horse-power, and generally speaking the greatest pains were taken at this plant to attain a very large production. Instead of two heating furnaces, which had become necessary through the increased output and which had been followed by the addition of a third heating furnace at the Oliver Wire Company of Pittsburgh, there were provided from the outstart four heating furnaces at the Joliet mill. Besides, 155-pound billets were rolled.

As a result of the rapid addition to rod rolling plants, the Illinois Steel Company, who had become the owner of the Joliet plant, feared that the competition among rod mills would become too great. As a result a contract was made with Garrett for five years, in accordance with which he was not to build any more rod mills, and there was purchased from him for this time the right to his plans. But the desired aim on the part of the Illinois Steel Company to restrict the building of new rod mills did not have the expected effect, because different engineers developed plans for mills. The continuous mill of Morgan & Daniels was then free, and at this time Morgan built a continuous mill for the American Wire Company at Cleveland. It is true that this did not meet with general approval, because every one was afraid of the delicate calculation and the enormous speed of the finishing trade. Still, the fact had to be acknowledged that the continuous roughing train worked admirably. Thus in 1885 E. H. Martin and John Beavis patented a mill combining, to some extent, the continuous with the Belgian system, and in 1891 and 1892 Thomas Fitch, one of the owners of the Pittsburgh Wire Company, built a mill which also differed from the Garrett design and showed good results. This mill had two trains, one of them three-high, for the roughing, five sets for the intermediate, and six sets in a line for the finishing. The two last sets are driven by a special engine, which also operates the automatic reels. Fitch built at this plant two partly automatic heating furnaces designed by Charles H. Morgan, and thus obtained an important saving in wages.

In 1892 Mr. Baackes built for the Baackes Wire Nail Company a mill in accordance with his design, which also represented a combination of the continuous with the Belgian system, and at the same time followed out the idea of Martin and Beavis to increase speeds step by step, thus reducing the length of the loops. This mill worked well except that it had the drawback that one set of rolls which had been given a large diameter in order to reduce the loops frequently broke on account of excessive speed. This proved that it is not wise to go beyond a certain speed in the case of the gears, which

are under a heavy strain and lead to frequent breakages. The rod mill of the Baackes Wire Nail Company cannot be forced above a production of 200,000 pounds without expecting hourly repairs. The general design of this mill is shown in Fig. 1. Realizing this state of affairs, Mr. Baackes made the design, shown in Fig. 2, for remodeling of the mill, which was carried out in 1894 at an expense of \$13,000. This sum is mentioned in order to show that a plant may be improved at a comparatively small outlay. It will be observed from a comparison of these two Baackes mills that the plan of 1892 consists of one roughing train with two sets of rolls followed by two continuous sets, by an intermediate train with three stands, of which two are continuous, and finally by a finishing train consisting of four stands. Since it is not expedient to carry the speed of the finishing rolls above 550 revolutions per minute without making it difficult for the roller to seize the rod, it follows that the preceding continuous and other systems must have a correspondingly lessened speed. The result was that the first roughing train could work only with a speed of 49 to 50 revolutions. The next continuous pass with lessened section made 80 and 150 revolutions; then the three stands of the intermediate train followed with 155; the next continuous passes with 260 to 350 revolutions, and the finishing train with 452 and 550 revolutions as geared.

It was soon shown that the rod working slowly in the different roughing and intermediate trains cooled off considerably, so that the necessary power required of the engine for rolling was increased. After remodeling of the train this was different. The roughing train made 85 revolutions. The intermediate train of five passes 170 revolutions; the following continuous trains 300 and 390 revolutions, and the finishing train 490 to 500 revolutions.

As soon as these changes had been made, 220,000 pounds a turn was easily made, or as much as the two heating furnaces, then a part of the plant, permitted. When this had developed, a third heating furnace was at once put in at a cost of \$2000, and the production raised to 250,000 to 275,000 pounds. Then after hats had been again distributed among the men 300,000 pounds was done, and shortly afterward there was reached at one time 320,000 pounds in one turn. This fact is mentioned only in order to show what this outlay of first \$13,000 and finally \$15,000 did for the plant. That this mill could not exhibit higher figures was due to the fact that nothing thus far had been done to increase the steam power by adding new boilers and strengthening the engines. Later on, in 1896 and 1897, two boilers were added to the 12 existing ones and the steam engines were equipped with a condensing plant. This carried the capacity of the engines to a total of 3700 to 3800 horse-power, and in the beginning of 1899 two automatic furnaces, built by Alexander Laughlin of Pittsburgh, were put in. Then the mill attained an output of 350,000, and several times over 372,000 pounds per turn, and could take its place among the other large producers.

In 1897 the Rankin mill, which had been built in 1895 by Garrett for the Braddock Wire Company, had attained an output of 230,000 to 250,000 pounds, or as a maximum 260,000 pounds, in spite of the fact that it had newly built Laughlin automatic heating furnaces and a Roberts inclined plane and its four engines, which, it is true, were not large.

Mr. Baackes was then intrusted with the plans for remodeling this mill. The reconstruction was a very difficult one, because the mill was hemmed in on all sides; on the one side there are the automatic heating furnaces, and further on the boilers and an engine for the adjacent wire mill. On the other side there is a large battery of boilers for the rod mill and for other departments of the works. This space could not be intruded upon, so that every inch had to be taken into consideration. This makes plain the different arrangement of the roughing and intermediate train, which is partly continuous and is arranged with one loop in the continuous mill. These were considerations which grew out of the lack of space. Soon after remodeling this mill recorded great success. Below are given the figures for the production of one week about four months after remodeling. These showed an average output of nearly 400,000 pounds per turn.

The details are as follows:

Production of Rankin Mill for week from Nov. 21 to Nov. 26 1898.

	Day Shift.	Night Shift.
Nov. 21, Monday.....	385,680	392,850
Nov. 22, Tuesday.....	353,870	377,510
Nov. 23, Wednesday.....	406,650	432,670
Nov. 24, Thursday.....	400,130	415,640
Nov. 25, Friday.....	408,020	382,660
Nov. 26, Saturday.....	375,610	.....

All the rolls were No. 5 size.

This makes a week's product in all turns of 4,311,290 pounds, or an average per turn of 391,936 pounds.

It is stated that the plant has repeatedly exceeded this output, but the exact data are not available.

In the midst of his discussion of the systems employing the Belgian method partially, Mr. Baackes returns

to the continuous mills. The Washburn & Moen Mfg. Company concluded that their location in New England did not meet the requirements of the great markets, and came to the conclusion to build a new works at Waukegan, near Chicago. F. H. Daniels had worked out two admirable plans for a continuous double mill, but neither was completely adopted for Waukegan. The mill built consisted of a continuous roughing train and a continuous finishing train, which finished two rods simultaneously. Instead of a second continuous finishing train there were built later on two separate Belgian finishing trains for ordinary rods, and a third for larger gauges, on which copper wire is sometimes rolled. Four engines, in one engine house, drive the trains, one of them running the roughing and the coarser finishing mills. The plant has a good capacity and in this year, with its four finishing mills, is estimated to have a capacity of 500,000 pounds per turn.

In spite of this great capacity at Waukegan, and in spite of the Garrett mill at Joliet, the demand for wire rods had so steadily grown in 1896, in the vicinity of Chicago, that the Illinois Steel Company was led to build a second mill, an undertaking which Garrett solved in a grand manner by remodeling the existing mill to a double mill.

This plan, unique in magnitude, consists of a continuous roughing train with six sets, followed by a seventh group of two sets at right angles, which deliver the rods

seize and center rods to the extent of 350,000 to 400,000 pounds in nine and a half hours' effective working time, which means 2500 to 2600 manipulations, the fact will be appreciated that the strongest man could not stand the strain. Therefore there are one and a half to two men for each station, who alternate at short intervals of about 20 minutes. Generally besides the exhausting roughing there are five stations which are more or less difficult, so that for certain stations one and a half and for others two men are ready. It was found, before the automatic heating furnaces were introduced, that it was impossible, in rapid work, for a single man to draw his billets from his furnace and deliver them to the rolls. Sometimes two men were placed at each furnace and billets were drawn from two and three furnaces. But often this method of handling did not suffice and only confused the men. The result was that in 1895 conveyers were put into many a mill, which received the billets at the heating furnace and delivered them to the rolls. These conveyors led to the plan to make the entire heating automatic. Mr. Baackes states that while he is an admirer of the double mill at Joliet, he does not advocate the arrangement for other plants, first, because of the difficulty of supervision, and second, because there is rarely so large a demand for wire rods at any one point as there is at Joliet. He prefers a good single mill with a high production of say 400,000 pounds per turn, and has designed a mill, shown in Fig. 3, which meets the requirements.

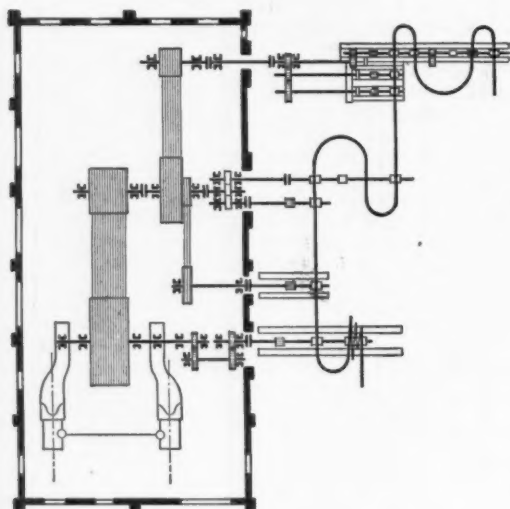


Fig. 1.—Baackes Rod Mill Before Remodeling.

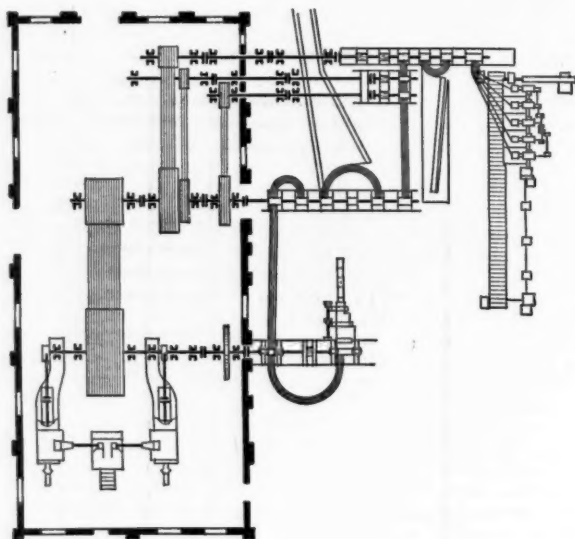


Fig. 2.—Baackes Rod Mill After Remodeling.

AMERICAN WIRE ROD ROLLING.

right and left to the two finishing trains. This seventh set takes the place of the roughing set of the former Garrett mill. Then follow the three sets of the intermediate mill and the two finishing trains of four sets each, exactly as in the former plants. It is worthy of note that the intermediate and finishing trains in a double mill are right hand in one and left hand in the other—i.e., that the rollers in the one mill must after seizing the rod turn to the right to re-enter it, while in the other they do it by a movement to the left. Men drilled in the one rarely do as well on the other, and it often takes days and weeks before they can perfectly do the work in the opposite direction. It was expected that these two mills would together show a record of 800,000 pounds, which apparently they have not accomplished as yet. It is possible that the mill, which needs two rollers and one head roller for each turn, is a little too large and requires too much supervision to attain the utmost work. The heavy roughing train, which takes 320-pound billets and which after shearing them rolls two pieces at the same time, has a great capacity. Accordingly a continuous Morgan has been placed in a straight line between the double finishing mills, for rolling hoops, bands and rods, this mill taking a part of the product of the continuous roughing train. It occurs that one of the double mills does not regularly get as many hot billets as it could handle, and this may explain the circumstance that the desired product of 800,000 pounds per turn has not yet been attained.

When dealing in a general way with the high product of the Garrett, Baackes, Fitch and similar mills, the fact ought to be explained that these high yields are not attained by having only one man for each station. When it is considered that one man is to be called upon to

Such a mill embraces two engines of an aggregate power of 4000 horse-power, or, better still, 4500 horse-power to 4800 horse-power, a continuous mill of eight sets, followed by an intermediate mill of two sets and two finishing mills of four sets placed as much as possible in one line. In this design Mr. Baackes carries the rod from the continuous train by a new repeater from one train to the other. By this means he avoids that the rod, after leaving the continuous train, is drawn between the subsequent trains, as it occurs with the Garrett and his own and similar designs. This drawing causes the rod in the central part to be smaller than it is at the beginning and at the end, which are not subject to the strain. Another advantage is that the five rollers who attend to the change from oval to Gothic sections are all on one side of the train, so that the superintendent is in better condition to control and help them when something gets out of order, instead of being forced to climb over the train, as he must do in the Garrett mill. As will be seen in Fig. 3, a double repeater leads from the continuous mill, followed by a triple, quadruple, five fold and six fold repeater. This number always leaves room for the next rod, which should go along somewhat more rapidly than usual. It is possible with five reels to handle 375,000 pounds per turn, but in many mills six are now in place, and Mr. Baackes has in his design provided for seven automatic reels.

The loops on the Gothic side, as well as those on the oval side, must be very carefully regulated. This is done by inclined planes like Roberts, or by planes opening sideways as Lehberger has patented it. There are other arrangements which will be developed in time which have the same object. It suffices now to state that the loops on both sides can be kept in good order readily without

calling for the use of hooker boys. The repeaters must be so arranged that whenever a disturbance occurs through a bad end of a rod it can be arranged while the mill is running without any loss of time. Besides, it is necessary, on account of the hard work to the men at the mill, that a blast of air be provided to them since the numerous rods give out a good deal of heat. Then, too, large automatic heating furnaces are necessary with a conveyor to the first set of rolls. The heating furnaces built in recent years by Alex. Laughlin have proved very efficient, and one of them can readily heat 220,000 to 240,000 pounds of billets per turn. Engines, boilers, condensers, &c., must be arranged in the best manner in order to economize power. As a rule, producer gas is used for heating the furnaces, and the Duff producers are particu-

rod in the right position to place it into the shear without loss of time, and by slightly stepping back put it into the mill. In doing so he bends over the other rods which are passing through. The second shear is placed between the eleventh and the twelfth pass for cropping the rear end, and is located near the eleventh pass in a manner opposite to the one alluded to above. The object of this is that the roller after having put in the front end can watch the rear end and as soon as it comes out of the mill, take it up and place it in the shear, whereupon the rod is drawn away by itself. These shears are suitably operated at a speed of 100 to 120 cuts per minute.

The quality of the wire rod at the different works and its correct section depend primarily upon the ability and the attention of the roller. However, different mills have

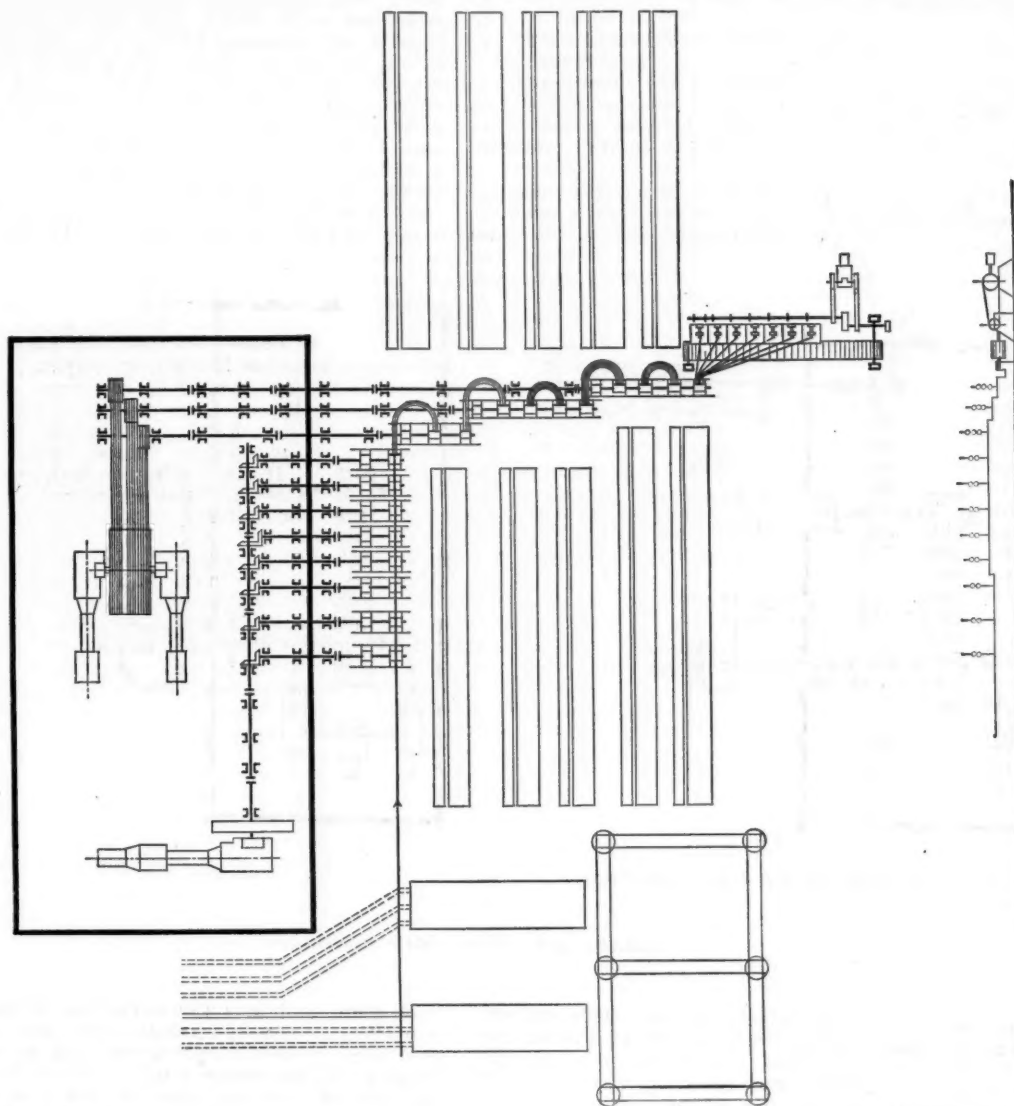


Fig. 3.—Improved Baackes Rod Mill.

AMERICAN WIRE ROD ROLLING.

larly to be recommended. In order to obtain further economy in running the mill it is advantageous to bring the billets from the steel plant, whether from the own works or by rail from other works, in such a way that handling is reduced to a minimum. The rods taken from the rolls should be brought by conveyor to the cars and there loaded by a simple apparatus by one or two men.

Mr. Baackes states that he has made the description of the different mills quite general in order to simplify a review of their development. He goes, however, into some details. In rolling down 4-inch billets it is very necessary that the butt end, and also to a lesser degree the other end, of the rod be cropped. Experience has taught that there is a certain point at which this cropping is most suitably done, and this in the case of the Garrett and similar systems is between the ninth and tenth pass. Mr. Baackes refers to a good shear which E. H. Martin has designed for him. The first shear between the ninth and the tenth pass is placed a little to the right of the roll into which it enters. The object of this is that the roller be in a position after he has turned and has the

peculiarities which it is difficult to overcome. For instance, in a continuous train the first and the last part of the rod is considerably thicker than the middle of it. This is due to the inevitable pull which must occur between the continuous rolls. The lighter and more regular this pull is the less are these differences; but it must be confessed that it is very difficult to attain a degree of perfection and to maintain it steadily. In the case of the Garrett and similar systems there is also a certain pull which takes place, notably at a point where the roughing train connects with the intermediate and the intermediate train connects with the finishing train. It is particularly great with the last seven passes, which cannot always equalize the pull. In this case the first end of the rod is round, while in the middle of the rod a certain oval section remains, which the grooves of the finishing rolls cannot completely fill. It is true, therefore, that the best wire, so far as form is concerned, is furnished by open Belgian mills, or by such as are to-day almost exclusively employed in Germany.

As for the scale which adheres to the rod, it may be

remarked that it is very heavy in the continuous mills, which work the rod at a high heat and without bending it. At some places appliances have been introduced to carry the wire before it is seized by the reel through a water tank, in order to get rid of the scale, but even in those mills in which loops are formed the scale will partially adhere, and it is desirable to expose the finished wire rod to a water spray, provided, however, that the rod is not of high carbon steel. The effect of this method may be readily observed by the greater or lesser consumption of sulphuric acid in pickling.

In order to avoid heavy loss by oxidation of the billets in the heating furnaces it is a good practice to heat as rapidly and as uniformly as possible, and then to carry the billets at once, as soon as they are warm enough, to the mill. The less superfluous heat is employed the less waste by oxidation there is in the heating furnace, and the less scale in rolling.

The idea may have arisen from repeated reference to production per turn that these maximum products have only been reached occasionally. This is so. Still it may be of interest to state what individual mills have done per month. Mr. Baackes cites a report from the earlier months of 1899, which, however, has been since considerably beaten at the same plant. Thus the Rankin mill rolled in one month 7659 gross tons of billets, and with a loss of 5.1 per cent, in weight produced 7268 gross tons of wire rods. In the same month the Garrett mill of the American Wire Company made 5466 gross tons of wire from 5614 gross tons of billets, with a waste of 5.98 per cent., and the Garrett mill in Beaver Falls produced from 6150 gross tons of billets 5725 gross tons of wire, with a loss of 7 per cent. The cost of rolling exclusive of the cost of waste of material at the Rankin mill was \$2.52 per gross ton. In the second mill it was \$3.44, and in the third \$3.24. Since the cost of the waste depends upon the current prices of billets the corresponding figures cannot be given. Generally speaking it is a fact that as the production increases the cost of rolling declines. To keep the heating furnaces in good shape and arrange regular charging and drawing has the greatest influence upon the waste. The loss in rolling, partly due to cutting off crops (which are recovered) amounts to 1 to 1½ per cent., and something must be wrong if it goes up to 2 per cent. or over.

The contract prices for rollers, exclusive of the day laborers, of which there are quite a number in the mills, varies at the different plants having Belgian trains from \$1.10 to \$1.25 per gross ton. Rolling mills with automatic furnaces like the Laughlin type secure considerable lowering in wages, 30 cents per ton, and in this case the contract wages amount to 80 to 95 cents per ton. It may be interesting to state that the finishing roller generally gets 9 to 9.02 cents per ton, while the man at the last Gothic pass receives 8 to 8.10 cents per ton. The three or four men at the roughing train receive for five passes together 17 cents per ton. The roller gets 15 to 20 cents per ton at the different works, and his helper 6.05 to 6.09 cents per ton. These figures are given by Mr. Baackes in order to permit of a comparison between the rates of wages in America and in Europe. Sometimes the cost of rolling is greater and sometimes lower than the figures quoted, but average figures only have been considered. It may be stated finally that the total cost of rolling according to the rates of wages paid and inclusive of all losses and waste range between \$3.50 and \$4.25 per gross ton in a well equipped plant.

The last meeting of the Philadelphia Foundrymen's Association was fairly attended to hear the reading of the very interesting paper by G. H. Hull, and which appeared in *The Iron Age* of last week. A number of questions were asked in regard to various points touched upon in the paper, Thos. Devlin, F. A. Riehle, Mr. Wanner, and other members of the association taking an animated part in the discussion. The central idea was to find out what guarantee buyers have in regard to the quality of the iron represented by the certificates. It was shown that the quality would be equal to the usual standards, and even a little beyond that, but the point with consumers is that they want an exact analysis. This it appeared could not be guaranteed, consequently those whose requirements are for a special analysis saw nothing to encourage them to change their present methods of buying subject to a guaranteed analysis. Mr. Hull stated, however, that this phase of the subject was under consideration, and might at some time in the not distant future become effective.

The Norfolk Shipbuilding & Dry Dock Company of Norfolk, Va., were incorporated on February 7 with a capital of \$500,000. J. P. Andre Motter is the president of the new company and H. W. Anderson of Exeter, Mass., vice-president and general manager. The company purpose to erect a shipbuilding plant and establish a large dry dock at Norfolk.

The Brass Industry in the Naugatuck Valley.

To one traveling through the Naugatuck Valley, with the view of studying the condition of the brass industry, one fact becomes clearly apparent. It is that the manufacturers of brass there, at the seat of the industry, are not working under the high pressure which taxed the mills to their utmost capacity but a few weeks ago. There is, in fact, but a fair amount of activity. This state of affairs exists in every branch of the industry, the effect being the same in sheets, rods, wire and tubing. Prices have recently been lowered somewhat in brass as well as copper goods. Sheet copper, for instance, has declined about 2 cents, and it is said that brass has suffered about an equal decline. The Copper Association has never been reputed to possess a superabundance of strength, and it is hinted that the recent meeting at which prices were lowered was an unusually lively one.

For the present condition of the brass industry the apparently unsettled position of the copper market is naturally mainly responsible. There has been an evident feeling of hesitancy all along the line. Consumers of brass are waiting with both eyes fixed on the course of the copper market, fearing a slump in the price of the metal which will bring about another decline in the price of brass. Manufacturers of brass are also watching the copper market with skeptical caution. As a result of this mistrust every one has been subsisting on the hand to mouth principle. It is generally conceded in the trade that this waiting policy culminated last Friday, when the Calumet & Hecla interests concluded a sale for a large block at 16 cents. An opinion which has many adherents is that the Calumet & Hecla Company and the copper consumers of the Valley have locked arms and arrayed themselves against the other powerful interest. The forces have taken their positions and it looks as though a most bitter strife will ensue before matters are again properly adjusted. It can scarcely be said, however, that the newly formed United States Metal Selling Company are not well nigh the center upon which development will revolve.

The amount of ingot copper which is now on hand in the Valley is doubtless as low as it is ever allowed to run, but this is counterbalanced by the fact that the stock of the mill products is rather large. The position is a peculiar one, inasmuch as that the general conditions of business in brass goods are particularly favorable, enabling the manufacturers to continue in their purchasing only according to their absolute needs, while on the other hand the selling of a large portion of the copper production has passed into one strong hand.

At factories where very large quantities of brass are consumed in manufacturing novelties, &c., it is stated that owing to the high price of brass the amount of iron and steel which is being substituted for brass is not inconsiderable. The makers of manufactured brass goods are not unusually busy at present. One of the busiest branches in the Valley at this time is the manufactory of copper wire. The demand for this commodity, especially for electrical purposes, continues well.

It was expected that the new rolling mill of the Waterbury Mfg. Company would be put in operation on February 1. A trial turn was given the machinery, which showed several defects and resulted in some damage to the machinery. Consequently it will not be possible to have the mill running before April 1.

There has been no extension of note to any of the mills. Neither have we heard of any prospective building of moment. The usual increasing of facilities in a small way and replacing of antiquated machinery has brought some of the mills to a higher efficiency, but the output of the plants has not increased materially. One of the largest additions, for instance, was at a mill in Waterbury, where a new building, equipped for pressing brass scrap into cakes, was erected.

That the new American Brass Company are a powerful factor is manifest. Arrangements are already under way which indicate methods which will be pursued toward reducing working expenses of the three constituent companies. At Torrington the Coe Brass Mfg. Company have in operation excellently equipped large tube mills. Just before the consolidation the Waterbury Brass Company commenced adding new tube mills. Now the work on the Waterbury tube mills has been discontinued, and it is said that all of the brass tubing of the new company will come from the Torrington mills. Similar rearrangement of the products of the mills, it will be seen, will work to good advantage. An official of the company stated that there were no operations under way toward the acquisition of other mills at present. It is said in an unofficial way, however, that there are other mills which are beginning to feel lonesome outside. There is also a rumor that the Benedict & Burnham Mfg. Company will soon become a party to the new company. There are many such rumors, however, and they all lack official

sanction. The company have opened a central office in Waterbury.

A few facts in connection with the company, which were divulged by one of the officials, are interesting: "The capital stock of the American Brass Company, for the present at any rate, will be \$8,000,000, divided into shares of \$100 each. At special meetings of the stockholders and directors of the American Brass Company the purchase of all of the shares of the capital stocks of the Coe Brass Mfg. Company, the Ansonia Brass & Copper Company and the Waterbury Brass Company were confirmed on a basis that already had the assent of all the parties interested. For every \$25 par value of the stock of the Coe Brass Mfg. Company the holder received \$75 par value of the stock of the American Brass Company. For every \$100 par value of the stock of the Ansonia Brass & Copper Company the holder will receive \$116 66 par value of the American Brass Company. For every \$25 par value of the stock of the Waterbury Brass Company the holder will receive \$78.12½ par value of the American Brass Company. This makes for the Coe Brass Mfg. Company stock, now \$1,000,000 par value, a price of \$300 for \$100, or \$3,000,000 valuation for the concern. For the Ansonia Brass & Copper Company, now with a par value capital stock of \$1,500,000, a price of \$116 66½ for \$100, or \$1,750,000 valuation for the concern. For the Waterbury Brass Company capital stock, now par value \$400,000, a price of \$312 for \$100, making a valuation of \$1,250,000 for the concern.

"The charter of the American Brass Company permitted a capital stock of \$20,000,000. Of this there was an original capitalization of \$500,000, with subscribed amount of \$200,000, of which \$40,000 had been paid in. This stock was held by representatives of the concerns now making the American Brass Company, together with representatives of Scovill Mfg. Company, Benedict & Burnham Mfg. Company, Holmes, Booth & Haydens and Plume & Atwood Mfg. Company. The stock held in behalf of the latter four mills has been surrendered. Following are the officers, Board of Directors and Executive Committee:

"Charles F. Brooker, president; Alfred A. Cowles, first vice-president; James S. Elton, second vice president; John P. Elton, secretary and treasurer. Directors—Charles F. Brooker, James S. Elton, James A. Doughty, Alfred A. Cowles, John P. Elton, Elisha Turner, Chandler N. Wayland, William E. Dodge, D. Willis James. The Executive Committee consists of Charles F. Brooker, John P. Elton, James A. Doughty, Alfred A. Cowles.

"The American Brass Company are a Connecticut corporation. Each of the constituent companies will retain their name and organization. The stock of this company is not watered and will not be listed or dealt in on Wall street. No promoters have had a hand in the organization and all stock is actual capital stock."

The company are formed on a most businesslike basis, and by those acquainted with the brass manufacturers of the Naugatuck Valley they will be recognized as an example of the conservatism on which that industry is builded.

The Shelby Steel Tube Company.

The Shelby Steel Tube Company of Cleveland, formerly incorporated under the laws of Pennsylvania, have been incorporated under the laws of New Jersey with a capital stock of \$15,000,000. The motives of the reorganization were to give an opportunity to influential people who will help to extend the business of the company to acquire an interest and to have the stock widely enough distributed so that it will more readily have a market value. The authorized capital stock of the new concern is \$6,000,000 7 per cent. cumulative preferred and \$9,000,000 common, of which \$5,000,000 preferred and \$8,150,000 common will be issued at this time. The intentions of the organizers of the company have been, first, to have the preferred stock represented dollar for dollar by tangible assets, and, second, to permit the common stock only fairly to represent the good will, patents and secret processes. It is claimed that both of these objects have been accomplished. The work of the reorganization was carried out through the efforts of Frank O. Lowden of Chicago, who is now a member of the Board of Directors of the new company.

The directors of the Shelby Steel Tube Company held their monthly meeting in Cleveland Thursday and Friday evening they left in a body for Chicago, where the reorganization of the company was effected. The new interests are represented on the new Board of Directors which was chosen at the Chicago meeting by John L. McKinney of Titusville, Pa.; F. J. Carolan of San Francisco; Frank O. Lowden of Chicago and James B. Dill of East Orange, N. J. The complete Board of Directors are W. E. Miller, A. A. Pope, R. L. Coleman, H. A. Lozier, B. J. Williams, E. W. Bliss, H. S. Hoyt, John L. McKinney, F. J. Carolan, Frank O. Lowden and James B. Dill. The old officers will continue, as follows: W. E.

Miller, president; W. S. Miller, treasurer; H. H. Cockley, secretary, and N. A. Gilbert, counsel. The headquarters of the company will continue in Cleveland.

It is stated that the stockholders are to receive in preferred stock in the new company for each share of stock held in the old company one-half of one share of preferred stock and three-fourths of one share of common stock. The rest of the preferred stock, with an equal amount of common stock, was distributed among capitalists. The subscription lists of the company were closed January 1, the full amount having been assured to that time.

During the past two years the Shelby Steel Tube Company have absorbed 14 plants which were manufacturing seamless tubing. About ten of these are now in operation.

Extensions to the Westinghouse Works.

(By Telegraph.)

A contract for a further considerable extension to the works of the Westinghouse Electric & Mfg. Company, at East Pittsburgh, has been awarded to W. F. Trimble & Sons of Allegheny. The total extension is expected to be completed within four months after the steel work is placed on the ground. The Westinghouse Company are anxious to have improvements proceeded with as rapidly as possible, as the additional space is necessary for keeping pace with their immense orders. The improvement will consist of an extension to the south of the east building, to make it equal in length to the main building. This extension will be 200 feet long and 76 feet wide, and will be steel frame and brick. The same building will be extended at the northern end, making its continuous length 206 feet, corresponding with the main aisle on the works. The most important part of the work, however, will be the erection of a high bay between the two main buildings. This will be 1206 feet long and about 65 feet wide, and added to the building on either side, will give the company one of the largest works in the world. The roof will be first erected over the space between the two buildings, and when completed the side walls will be torn out and the entire space thrown into one immense building. This will give the company working space 1206 feet long to about 370 feet wide. The inside walls of the two buildings will be strengthened by the erection of heavy iron columns riveted to the old ones, and carried up 50 feet higher, upon which will be placed the roof and crane girders. It is the intention to carry on this work so as not to interfere with the manufacturing business.

Contractor Trimble expects to start work next week and intends pushing on as rapidly as possible. Under the present conditions of the iron market it is impossible to tell when structural material can be obtained, as all the mills are filled far ahead with orders. Every effort will be made to get the material early, and it is expected that the plant will be in operation next summer or early in the fall.

The Westinghouse Electric & Mfg. Company are at present completing a large extension to their East Pittsburgh works, but the orders have been coming in so fast for electrical apparatus that the capacity of the enormous plant has been sorely taxed. From the way in which business is keeping up, it is expected that the plant will have all the work it can do for some time to come. The company now have orders not only for the United States, but also for Europe, and no immediate relief can be had from the new plant of the British company at Manchester, as it is not expected to be completed for over a year. All branches of the electrical business are thriving as they never did before and the Pittsburgh works are receiving a large share of the beneficial results.

The United States Steel Company are to build a plant at Everett, near Boston, Mass. It is to consist of four open hearth furnaces to be used for the production of steel castings.

The Iron Age

New York, Thursday, February 15, 1900.

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JOHN S. KING,	- - - - -	BUSINESS MANAGER.

Our Enormous Foreign Trade.

The publication of the report of the Bureau of Statistics for the calendar year 1899 makes it possible to present some details relative to the foreign trade in the iron, metal and allied industries, which have recorded such extraordinary advances in recent years. Turning first to the exports of iron and steel, so far as the returns present tonnage figures, we have

Exports of Iron and Steel—Gross Tons.				
	1896.	1897.	1898.	1899.
Iron ore.....	11,016	7,583	31,579	40,690
Ferromanganese ..	62,071	5,185*	3,700	13
Pig iron.....	1,290	257,501*	249,377	228,640
Scrap	3,505	42,469	73,944	76,632
Bar iron.....		4,493	7,074	10,603
Steels bars and rods (exclud. wire rods).	8,855	38,167	24,643	30,727
Iron rails.....	628	5,413	10,865	6,442
Steel rails.....	72,503	142,808	291,038	171,272
Billets, ingots and blooms	No report	6,356†	28,600	25,605
Hoop, band and scroll	268	1,424	1,593	2,869
Wire rods.....	No report	10,484†	18,493	17,000
Iron sheets and plates	767	4,045	4,555	6,196
Steel sheets and plates	1,850	5,029	27,075	50,636
Structural iron.....	No report	15,072†	34,038	54,244
Wire	37,864	53,075	74,690	89,527
Cut nails.....	10,584	15,076	15,755	9,974
Wire nails.....		5,793	13,714	33,535
All other nails and tacks	4,260	3,167	2,094	2,076

* Ferromanganese and spiegeleisen first separated July 1, 1897.

† For second half of 1897 only.

In some of the heavier lines these figures show some decline, notably in steel rails and in pig iron. As an offset there has been an increase in steel plates, structural iron, wire and wire nails. We know that rail and plate orders have fallen off heavily, as they have in pig iron, steel billets and bars, and in wire rods. It is certain, therefore, that the first half of the current year will witness a sharp decline in the exports, although selling may be resumed, which will help out the shipments of the second half of 1900.

As it is, 1899 was behind the year 1898 in the cruder forms. Adding together the figures given in the above table, exclusive of iron ore, pig iron and scrap, we have in 1898 a tonnage of 554,207 gross tons as compared with 510,306 gross tons in 1899 of rolled products. Add 15 per cent. as a rough estimate to get at the quantity of pig iron which these quantities represent, and add further the pig iron exports, and we reach an equivalent, roughly, of 1,000,000 tons of pig iron for 1898 and 825,000 tons for 1899.

Of course this does not include the tonnage represented by a number of different articles for which the statistics record nothing but values. This is particularly true of one line, pipes and fittings, which apparently jumbles together merchant pipe and cast iron pipe. We have been told that the 1899 exports of merchant pipe figured up to about 50,000 tons, and it is certain that very considerable quantities of cast iron pipe were shipped abroad. The values of this group jumped from \$1,252,252 in 1897 to \$6,763,393 in 1899.

Then there is the tonnage of metal which has gone into machinery and other exported articles, which would certainly carry the total for 1899 to 1,000,000 tons, while it must have been over 1,200,000 tons equivalent in pig iron in 1898.

The exports of iron manufactures for which values only are reported were as follows during the last three years:

Exports Iron and Steel, Values Only Reported.

	1897.	1898.	1899.
Car wheels.....	\$136,852	\$124,069	\$163,323
Castings, not elsewhere specified	862,208	780,830	1,348,133
Cutlery	164,250	172,982	252,156
Locks, hinges and builders' hardware	4,027,757	4,308,799	5,464,913
Saws	89,312	232,095	231,837
Tools, not elsewhere specified	2,288,013	2,404,327	3,246,780
Cash registers.....			421,141
Electrical machinery.....	917,453	2,523,644	3,143,336
Laundry machinery.....			182,832
Metal working machinery.....	2,040,888†	5,741,750	6,840,924
Printing presses.....	743,221	843,688	1,037,644
Pumps and pumping machinery	955,334†	2,300,811	3,016,645
Sewing machines.....	3,193,136	3,062,471	4,103,828
Shoe machinery.....	405,252†	939,671	961,736
Fire engines.....	1,169	6,588	21,848
Locomotives	3,055,842	5,190,782	4,767,850
Stationary engines.....	359,698	352,668	494,939
Parts of engines and boilers	895,267	1,145,508	1,439,363
Typewriting machines.....	1,566,916	2,077,250	2,776,363
All other machinery.....	16,237,045	16,413,893	19,721,191
Pipes and fittings.....	1,252,252	4,595,451	6,763,396
Scales	46,469	106,085	164,710
Scales and balances.....	368,831	328,940	487,113
Stoves and ranges.....	360,847	449,007	524,024
All other manufactures of iron and steel.....	9,385,379	9,933,992	12,045,634

* Not separately stated prior to July, 1899.

† Not separately stated prior to July, 1897.

The total values of all the goods classified under iron and steel and manufactures thereof were:

Total Exports of Iron and Steel, and Manufactures.

1897.....	\$62,737,2501
1898.....	82,771,5501
1899.....	105,689,6451

These figures show the enormous growth of our exports in a few years, and at the same time convey a hint of the magnitude of the iron and allied industries, when the fact is taken into account that after all only a small part of our product seeks an outlet beyond our borders.

Nor do the figures include the exports of cognate and allied industries, notably the metal trades. The following table records the movement in these:

Exports of Metals, &c.

	1897.	1898.	1899.
Mowers and reapers.....	\$3,149,625	\$6,551,741	\$9,739,129
Plows and cultivators.....	623,469	1,126,070	1,779,806
All other agricultural implements	1,529,713	1,395,573	2,075,589
Aluminum and manufactures		239,997	291,515
Brass and manufactures.....	1,346,802	1,237,027	1,007,072
Copper sulphate.....		466,244	1,302,420
Clocks	942,951	976,090	1,147,848
Copper ore and matte.....	1,199,029	755,443	382,989
Copper ingots, &c.....	30,627,945	33,598,869	41,250,166
Copper manufactures.....	958,379	1,190,939	1,852,499
Cartridges	1,399,514	1,249,907	1,472,082
Lead and manufactures.....		215,239	273,919
Nickel, oxide and matte.....	997,391	1,359,009	1,151,928
Oxide of zinc.....	104,140	252,194	366,598
Plated ware.....	471,528	410,803	493,528
Quicksilver	394,549	440,587	609,586
Tin, manufactures of.....	284,020	281,794	401,217
Zinc ore.....	211,350	299,870	725,944
Spelter	1,356,538	1,033,959	742,521
Zinc manufactures.....	71,021	138,165	143,232
Railroad cars.....	544,528	1,542,706	2,103,699
Street cars.....	763,075	520,803	477,658
Carriages and parts.....	1,850,779	1,804,006	2,454,812
Bicycles	6,902,736	7,092,197	4,820,284
Lamps, chandeliers, &c.....	660,544	704,805	881,838

* Not separately stated prior to 1897.

† Error in reports.

The striking fact in this table is the heavy export in crude copper and the relatively small business done in lines of manufacture of which it is the component part of chief value.

The record of business in agricultural implements is good, while the sharp drop in the exports of bicycles in 1899 is noteworthy.

To complete the series we may add a few miscellaneous items:

Exports of Miscellaneous Articles.

	1897.	1898.	1899.
Fire brick.....	\$110,626	\$146,632	\$214,275
Anthracite coal, tons.....	1,298,768	1,350,948	1,707,796
Bituminous coal, tons.....	2,399,263	3,152,457	4,044,354
Coke, tons.....	173,034	199,562	280,196
Cordage	\$580,737	\$569,893	\$913,730
Twine	\$801,976	\$1,217,897	\$2,418,966
India rubber belting, hose and packing.....			\$279,069

* Not stated prior to July, 1899.

It will be observed that there has been a fair increase

In the coal trade, although considering the fact that we raise close to 200,000,000 tons the percentage is not very large.

The import statistics, to which at one time every one in the iron trade turned first, have now been relegated to a secondary position. Generally speaking there has been an increase in the iron and steel imports, as the following table shows:

<i>Imports of Iron and Steel.</i>			
	1897.	1898.	1899.
Total value, exclusive of ore.	\$13,835,950	\$12,474,572	\$15,790,206
Iron ore, gross tons.....	489,970	187,093	674,098
Pig iron, gross tons.....	19,212	25,152	40,372
Scrap iron, gross tons.....	1,549	1,783	11,675
Bar iron, gross tons.....	13,998	19,119	19,971
Steel rails, gross tons.....	415	200	2,134
Hoop, bands, gross tons.....	28	3	683
Steel ingots, billets, gross tons	17,232	10,655	12,600
Sheets, plates and taggers, gross tons.....	2,614	2,270	7,043
Tin plate, gross tons.....	88,315	66,775	58,914
Wire rods, gross tons.....	16,414	15,985	17,964
Wire and wire articles, gross tons.....	2,553	2,016	2,363
Anvils, gross tons.....	317	308	239
Chains, gross tons.....	233	117	197
Cutlery.....	\$1,855,375	\$1,059,536	\$1,408,809
Files and rasps.....	39,908	40,492	47,624
Firearms.....	632,078	611,862	798,742
Needles.....	337,375	409,427	366,412
Machinery.....	1,371,098	1,930,436	2,185,566
Shotgun barrels.....	40,367	91,891	168,734
All other manufactures of iron.....	1,166,985	1,096,765	1,457,433

The sudden drop in the imports of iron ore in 1898 was due to the Spanish war. The increase in the imports of pig iron is due largely to importations of low phosphorus special pig. Bar iron imports represent largely Swedish stock and the same is true of wire rods. The increase in rails grew out of an importation of a small lot of girder rails for prompt delivery, while the increase in the imports of plates is traceable to some purchases of foreign ship plates during the boom. It will be observed that the tin plate imports are falling off. Of course the greatest part of the plates brought in is for the export trade. Altogether there is nothing alarming in the import statistics, and aside from some import orders for scrap very little work has gone abroad, nor is it likely with international values at the present level.

The Supremacy of the Jig.

While the custom of duplication of parts, made necessary by the interchangeable method of manufacturing, has influenced the employment of jigs, it is more than probable that direct competition has been a factor of no mean importance. Jigs are now present in every shop, and the amount of capital locked up in them is beyond calculation. Sometimes only a few are employed, while in many instances there are complete sets for the building of every one of the products. It is a common report that if two of a kind are required, build a jig first, and the two will be similar in every respect. This exaggeration points the fact that the jig is here as a result of the modern refinements in building, while the place it has made for itself will be permanent.

Jigs are, or should be, alike in one respect—namely, their accuracy and their ability to turn out work in precise duplication. They are different in two qualifications, first cost and the method of making them. All are alike in that they should resist wear to the greatest degree possible. A poor jig is a vexation of spirit, with absolutely no good characteristic except its scrap value; its use will inevitably result in hurting the prestige and impairing the capital of any establishment in which it may make its appearance. Fortunately it is not like the poor—it is not always with us. The best talent in the mechanical world has been engaged in the designing of jigs, and he who can make one fit in a strange place resembles the man who plants a tree—the benefit is widespread. The ordinary jig may be only a collection of hardened steel bushings held in position by a cast iron

box. It really seems as if some builders try to make the box as rough in appearance as possible, perhaps calling to mind the contrast there will be between the jig and the work produced with it. We know of one tool builder who employs jigs of this description and whose machines have a reputation for accuracy that is world wide.

The new concern are confronted with the jig question at the very beginning of their existence. The quicker they decide to standardize their methods and appliances the more prosperous will be their future. Without this they cannot hope to compete with their neighbors along like lines. When it will pay to make a jig is a hard nut to crack, and it may not be wise to always follow the advice: "Settle the design first, then make the jigs."

The Carnegie-Frick Disagreement.

Henry Clay Frick has filed a bill in equity in the Court of Common Pleas No. 1 of Allegheny County against Andrew Carnegie and the Carnegie Steel Company, Limited, praying:

Mr. Frick's Demands.

"1. For a decree that the pretended transfer of his interests in the company was and is null and void, and that he is still the owner of all such interest and is entitled in every lawful way to represent and act for the same.

"2. For an injunction restraining the defendants from any interference with his interest in the said company and from excluding him from participation in the care and management of the assets and business.

"3. A decree ordering the defendants to cancel upon the books of the firm any assignment or transfer heretofore made or pretended to be made to said association of the plaintiff's interest in the firm.

"4. A decree ordering the defendants to cancel and erase all entries upon the books of the firm of the Carnegie Steel Company, Limited, of insufficient, unfair and improper valuations of their assets and of the plaintiff's interest therein, and to cause the said books so to be kept as to fairly and fully show the real value of the Carnegie Steel Company, Limited, and the plaintiff's interest therein.

"5. In case the defendants shall refuse the offers made by the plaintiff and shall refuse to continue the said business and allow him to participate in the management and control thereof and of the properties of the Carnegie Steel Company, Limited, in conjunction with themselves, and shall insist upon the exclusive management by themselves of said business and assets, and shall continue to exclude the plaintiff from his interest in the business and assets of the said firm, that the court will thereupon allow the plaintiff to declare the said firm of the Carnegie Steel Company, Limited, dissolved, and appoint a receiver to take charge of all the business and assets of the said firm, permitting said receiver to fulfill unperformed contracts and to do whatever shall be necessary in and about the proper liquidation of their affairs, and that, after the conversion of the entire assets of the company into money and the payment of the debts of the said company, the court will then distribute the balance thereof among the partners in proportion to their interests.

"6. That an account be taken between Carnegie and the plaintiff, whereby Carnegie shall be charged with all the losses, expenses and damage he has caused by his illegal and fraudulent conduct; and that, if Carnegie persists in his said fraudulent scheme and refuses the offers hereinbefore made, and thus causes the actual dissolution of the firm, all losses incurred by the plaintiff by reason of the said dissolution and forced winding up of the firm shall be charged against him, and that he shall be decreed to make good and pay to the plaintiff the difference between what his interest was fairly worth on or about February 1, 1900, and the amount he shall receive through the decree of this court in final liquidation and settlement of the said firm. That all entries Carnegie or any other person has caused to be made on the books of the Carnegie Steel Company, Limited, in pursuance of said fraudulent scheme of said Carnegie, shall be erased and canceled under the decree of this honorable court."

Willis F. McCook, counsel for Mr. Frick, has summarized as follows the lengthy bill in equity:

"In 1892 there were two limited partnerships:

"1. Called Carnegie Brothers & Co., Limited, with a capital of \$5,000,000, who made steel rails and owned only the Edgar Thomson steel rail mill in Braddock Township, and 2. Called Carnegie, Phipps & Co., Limited, with a capital of \$5,000,000, who made all kinds of steel plates, structural material, iron forgings, made the material for and built bridges, made armor plates and made material for the same.

"This latter firm owned the Upper and Lower Mills in Pittsburgh, the extensive Homestead Mills at Homestead, the Keystone Bridge Works in Pittsburgh, the armor plate mill near Homestead, the Hartman Steel Works in Beaver County and other properties.

"Carnegie owned over 50 per cent. of each of the old firms and he, with Frick, Phipps and others owning interests in each, formed in 1892 what constituted a new partnership, called the Carnegie Steel Company, Limited. In this Carnegie retained over 50 per cent. and now has 58 1/2 per cent., while Frick has 6 per cent. Both old firms were merged into the new, who had a capital of \$25,000,000 and operated all the old works. This new firm were under the immediate care and supervision of Frick, as chairman, from 1892 to December 5, 1899. They greatly enlarged the capacity of their different works, enlarged their output and purchased other plants, ore mines, &c.

"Carnegie lived in New York and passed much of his time abroad, remaining at one time for 18 consecutive months. He did not pretend to manage the current business, although he was consulted as to important matters.

Big Profits.]

"The business from 1892 to 1900 was enormously profitable, growing by leaps and jumps from year to year until in 1899 the firm actually made on low priced contracts in net profits, after paying expenses of all kinds, \$21,000,000. In November, 1899, Carnegie estimated the net profits for 1900 at \$40,000,000, and Frick then estimated them at \$42,500,000.

"Carnegie valued the entire property at over \$250,000,000 and avowed his ability in ordinarily prosperous times to sell the property on the London market for £100,000,000, or \$500,000,000.

"In May, 1899, Carnegie actually received in cash and still keeps \$1,170,000, given him as a mere bonus for his 90 days' option to sell his 58 1/2 per cent. interest in this steel company for \$157,950,000. Frick's 6 per cent. on that basis would be worth \$16,238,000.

"Frick now alleges, right at the height of this enormously successful business, whereby, at least in part he made for Carnegie these enormous profits and values, that Carnegie suddenly, and with malevolent intent toward him, on December 4, 1899, arbitrarily demanded of him his resignation as chairman, and this without any reason except to gratify Carnegie's malice.

"Frick in the interest of harmony gave his resignation, and subsequently on January 11, 1900, after Carnegie had thus deprived him of his office, he (Carnegie) demanded of Frick that he (Frick) should sell to the firm his interest in it at a figure which would amount to less than one-half of what this interest is fairly worth. Frick refused to sell at that price, but offered to sell and allow three men to value the interest sold. Carnegie refused this and left Frick, threatening him for not yielding to his demand.

The Partnership Agreements.

"Frick now alleges that after his resignation and at the time of this last interview Carnegie was fraudulently and secretly, without Frick's knowledge or consent, attempting to carry out a scheme which if successful would enable Carnegie, as Carnegie hoped, to confiscate Frick's interest in the firm at probably not much over 33 per cent. of its real value; that is, say, not over \$6,000,000 for what on the basis of Carnegie's option was worth \$16,238,000.

"This scheme, Frick says, he can prove was to revive and reinstate and make operative an unexecuted and abandoned so-called iron clad agreement of 1887, which related solely to Carnegie Brothers & Co., Limited, and never did include the Carnegie Steel Company, Limited; and also to attempt to make binding on Frick another so-called iron clad agreement of 1892 which Carnegie never before had executed, which Henry Phipps had always refused to execute and which many other partners had never signed. This agreement, contemplated in 1892, Carnegie knew, as Frick now alleges, was absolutely void in 1899, and yet Carnegie appeared at a meeting of the Board of Managers of the Carnegie Steel Company, Limited, held January 8, 1900, in Frick's absence, and presented false and misleading resolutions whereby he attempted to make operative and reinstate the so-called iron clad agreement of 1887, and also directed his copartners to sign the so-called agreement of 1892, which neither he nor any of them had theretofore executed. All this, it is alleged, Carnegie did secretly and purposely concealed the knowledge thereof from Frick.

Mr. Carnegie's Control.

"Carnegie was enabled to control his partners because most of them still owed the firm money for their interests, and, Carnegie dominating the firm by a majority interest, they were unwilling or unable to withstand his demands. Carnegie induced some of his copartners to sign the so-called agreement of 1892, and then without warning sprung upon Frick a notice on January 15, 1900, which he

has also caused his copartners secretly to sign, and which was based upon the pretended existence of the so-called iron clad agreement.

"Carnegie followed this notice by compelling, on February 1, 1900, Schwab, the president of the company, to transfer on the books of the company all of Frick's interests in the Carnegie Steel Company, Limited, to the said company, and he now pretends that he (Carnegie) can practically dictate to Frick the value at which he will take these interests. He claims that Frick is not entitled to anything for the good will of the company is not entitled to have his interests valued as of a going concern, but that he (Carnegie) can use old and obsolete figures which have stood on the books for years, in many respects unchanged, so as to reduce the value of Frick's interests to the neighborhood, he hopes, of about \$6,000,000.

"As Carnegie owns 58 1/2 per cent. of the Carnegie Steel Company, Limited, he will therefore own more than one half of the 6 per cent. which Frick sells, and if he can thus acquire one half of Frick's holdings for what would amount to about \$3,000,000, he will make a net profit on that transaction alone, based on his own selling price, as above stated, in the neighborhood of \$5,000,000.

"Frick further says that never since 1887 had either firm attempted to force a partner to sell; that no interest whatever was ever acquired under the so-called agreement of 1887 and none under the one of 1892, except that at times when the financial condition and earning power of the company were radically different the company did purchase the interests of three deceased partners, but by an amicable and satisfactory arrangement with the representatives of each.

"Never in the whole history of both firms was it ever supposed that any partner had placed himself in such position that Carnegie could, through personal malice, force him from the firm, and that for Carnegie to attempt this in 1900, through the guise of proposed agreements, which looked to the honor and well being of the firm, to gratify his personal malice, was most vicious and fraudulent misconstruction and misuse of the same.

Mr. Frick's Offer.

"The bill alleges that the new partnership of the Carnegie Steel Company, Limited, is not a limited but a general partnership, but Frick is unwilling to take advantage of what he believed to be a limited partnership until he was advised otherwise after this controversy arose, and he therefore offers:

"a. To sell his interests in the firm at what three business men judge them to be fairly worth.

"b. To execute new papers making a valid, binding, limited partnership and to continue the firm, in all respects, as it was intended theretofore to do.

"c. To continue the firm even if they are a general partnership and all are individually liable, provided he be allowed to participate in the management because to leave the sole management to Carnegie would result eventually, as he (Frick) believes, in financial loss.

"d. If Carnegie refuses all these offers then he asks the court to dissolve the partnership and to have a receiver appointed to sell the property and pay the debts and distribute the balance."

The Carnegie Steel Company, Limited.

One of the interesting clauses in the bill tells how the capital of the company was provided. It says:

"The agreement of 1892 provided that capital to the extent of \$20,000,000 should be paid in in cash on or before June 30, 1892, but made no provision for the remaining capital—viz., \$5,000,000. Said amount of increased capital was never paid into the association in cash, either on or before June 30, 1892, or later. Said increase was made in the manner following:

"On June 30, 1892, the firm of Carnegie, Phipps & Co., Limited, declared a dividend of 200 per cent. on their capital stock of \$5,000,000. The amount of this dividend thus declared was \$10,000,000. On said June 30, 1892, the firm of Carnegie Brothers & Co., Limited, also declared a dividend upon their then capital of \$5,000,000 of 200 per cent., making the amount of the dividend thus declared \$10,000,000. Checks were given by Carnegie, Phipps & Co., Limited, to their members, and by Carnegie Brothers & Co., Limited, to their members, for their several shares of said dividends, said members being the subscribers to the articles of association of the Carnegie Steel Company, Limited.

"These checks thus given to said members were indorsed over by them in payment of their several subscriptions to the Carnegie Steel Company, Limited. In fact, no cash was paid by either of said limited companies, neither by Carnegie Brothers & Co., Limited, nor by Carnegie, Phipps & Co., Limited. There was not cash in bank to the credit of either company to meet said checks thus by each drawn.

"Subsequently Carnegie, Phipps & Co., Limited, having retained assets sufficient to pay their obligations other than those assumed by the Carnegie Steel Company,

Limited, conveyed to the Carnegie Steel Company, Limited, all their property, real and personal. All these assets of Carnegie Brothers & Co, Limited, at the time of said articles of association of 1892, and for some time prior thereto, were chiefly in the shape of real and personal estate.

"It would have been impossible for said company to have paid said checks thus drawn by them without selling the whole or part of said property, real and personal, all of which was needed for the conduct of the business of the Carnegie Steel Company, Limited, and was thereafter used by them in carrying on their business."

Mr. McCook also called attention to the fact that three of the oldest partners, Henry Phipps, Jr., Henry M. Curry and F. T. F. Lovejoy, and several smaller holders of interests are in sympathy with Mr. Frick and opposed to Mr. Carnegie's present attempt.

The Iron Clad Agreement.

The "iron clad agreement" is as follows:

"This agreement, taking effect by and between Carnegie Brothers & Co., Limited, and Carnegie, Phipps & Co., Limited, hereinafter styled the association, and (name of retiring partner), all of Pennsylvania.

"The said (name of retiring partner), for and in consideration of covenants and agreements hereinafter mentioned, to be kept, done and performed by the said (retiring partner) association, and for and in consideration further of a cash payment this day made on account of this agreement, as evidenced by certain receipt vouchers of even date with the signing hereof, does now covenant and agree, for himself, his heirs, executors and assigns, to sell on demand, as provided hereinafter, to assign, set over and transfer in such manner and form as may be deemed necessary, or advised by counsel to said association, or to either of them, or to such person or persons as they shall designate:

"All and singular the interests held by him, the said (retiring partner), in the following named associations and companies, to wit: Of the paid up capital of ———; Carnegie Brothers & Co., Limited (number of shares); Carnegie, Phipps & Co., Limited; H. C. Frick Coke Company, Keystone Bridge Company, Union Supply Company, Limited; Youghiogheny Railroad Company, Limited; Youghiogheny Water Company and Mt. Pleasant Water Company, together with all undivided or surplus profits in any way applicable thereto at date of (sale or retiring partner) and all dividends declared on or after same date.

"On the part of said associations it is agreed:

"To account to the said (retiring partner) for the full book value of the said interest hereinbefore mentioned (at the date of retirement), and after deducting from their aggregated value as aforesaid such charges and claims as may properly and lawfully appear in their account with him, to pay the balance remaining in cash or notes, as provided in a certain agreement dated January 10, 1887, and further, upon the establishment of the book value of said interests at time of retirement, to make up a statement of account showing the balance due the said (retiring partner), and so soon thereafter as the parties in interest may be able to confer to make settlement thereof as before provided.

"It is further understood and agreed that this agreement is to be considered as a part of and supplemental to certain like agreements dated January 10 1887, currently known as the 'iron clad' agreements, the one between the partners composing the association of Carnegie Brothers & Co., Limited, and the other between the partners composing the association of Carnegie, Phipps & Co., Limited, and is made in accordance therewith and subject to all the provisions thereof.

"It is further distinctly understood and agreed that this agreement shall have the same effect and be fully considered an absolute sale and transfer beyond recall by said (retiring partner), to such assign as the said associations may elect, of all the interests covered hereby or mentioned herein, conditioned only upon the payment hereafter, as provided hereinbefore by the said associations of the balance due thereon, the sole intent and ultimate purpose of this agreement being to restrain, pending the establishment of the book value of the interests, the payment of the balance of their value and their formal transfer and assignment, under this agreement, all and singular, the parties hereto, from any action concerning or disposition of the said interests, or any part thereof, other than that contemplated in the before cited agreement of January 10, 1887, and specifically covered by this supplement thereto. In witness whereof the parties in interest have signed, sealed and delivered this memorandum of agreement, this — day of —.

"CARNEGIE BROTHERS & CO., LIMITED.
"CARNEGIE, PHIPPS & CO."
(Name of retiring partner.)

On December 30 the list of shareholders of the Carnegie Steel Company, Limited, was as follows:

Names.	Percentage.
Andrew Carnegie	58 1/2
Henry Phipps, Jr.	11
H. C. Frick	6
George Lander	4
C. M. Schwab	3
H. M. Curry	2
W. H. Singer	2
L. C. Phipps	2
A. R. Peacock	2
F. T. F. Lovejoy	2 1/8
Thos. Morrison	2 1/8
G. H. Wightman	2 1/8
D. M. Clemson	2 1/8
James Gayley	11 1/16
A. M. Moreland	11 1/16
Chas. L. Taylor	1 1/2
A. R. Whitney	1 1/2
W. W. Blackburn	1 1/8
John C. Fleming	1 1/8
J. Ogden Hoffman	1 1/8
Millard Hunsiker	1 1/8
G. E. McCague	1 1/8
James Scott	1 1/8
H. P. Bope	1 1/8
W. E. Corey	1 1/8
Jos. E. Schwab	1 1/8
L. T. Brown	2 1/8
D. Y. Kerr	1 1/8
H. J. Lindsay	1 1/8
E. F. Wood	1 1/8
H. E. Tener, Jr.	1 1/8
George Megrew	1 1/8
G. D. Packer	1 1/8
W. B. Dickson	1 1/8
A. C. Case	1 1/8
John McLeod	1 1/8
C. W. Baker	1 1/8
Undivided, F. T. F. Lovejoy, trustee	1 1/2

The following changes have taken place since December 30, 1899:

	Per cent.
H. P. Bope bought	1 1/8
P. T. Berg bought	1 1/16
A. C. Dinkey bought	1 1/16
James Gayley bought	1 1/16
A. R. Hunt bought	1 1/16
Charles McCreery bought	1 1/16
Total	7 1/16
Held by F. T. F. Lovejoy, trustee, December 30, 1899	1 1/2
Held by F. T. F. Lovejoy, trustee, January 1, 1900	1 1/8

The Damascus Steel Company.—The Damascus Steel Company of Pittsburgh, with works at Carnegie, Pa., manufacturers of high grade tool steel, have decided to remove their plant to Parkersburg, W. Va. A site of about 60 acres has been secured, on which the Damascus Steel Company will build a rolling mill and forge shop and greatly increase their capacity for the manufacture of Damascus tool steel. The Fulton Tool Mfg. Company of Canal Fulton, Ohio, and the Crown Wire Company of Duquesne, Pittsburgh, will also remove to Parkersburg, occupying part of the site of 60 acres.

The drilling tool and machine shop business of the Oil Well Supply Company of Pittsburgh has grown so rapidly and to such proportions that for some time past the Twenty first street department of that concern in Pittsburgh has been very much crowded, and the firm found it absolutely necessary to enlarge their plant. They now occupy the east side of Twenty first street from the Allegheny Valley railway to the Allegheny River, and have just purchased the Ireland & Hughes property on the opposite side of Twenty first street, which is 87 feet wide by something over 400 feet deep, extending from the Allegheny Valley railway to the river. This will give the Oil Well Supply Company greatly increased facilities, and enable that concern to put up a machine shop and tool works of larger capacity. As yet no definite plans have been made as to the new building, but it is expected these will be defined in a short time and work commenced as soon as possible.

The Chicago Time Register Company, manufacturers of autograph, numerical and computing time recorders, have removed their offices from the Fisher Building to 9 and 11 South Water street, Chicago. The company now have agencies at 189 Broadway, New York; 911 Girard Building, Broad and Chestnut streets, Philadelphia; 348 Markham street, Toronto, Canada, and 5 Bradford avenue, Redcross street, London, E. C., England.

OBITUARY.

WILLIAM G. CRAMP.

William G. Cramp, for many years dockmaster of the William Cramp & Sons' Ship & Engine Building Company, Philadelphia, died suddenly from paralysis, on February 12, at his home in Philadelphia, aged 77 years. He was born in Kensington, his father, Jacob Cramp, being a brother of the founder of the present Cramp building firm, and was taught the trade of shipbuilding by his uncle. From 1876, until November of last year, when he retired, Mr. Cramp held the position of dockmaster, in which he gained an enviable reputation.

ORRIN L. JENKS.

Orrin L. Jenks died at Port Huron, Mich., on February 5, aged 58 years. He was born in Birmingham, Mich., and went to Port Huron in 1852. In 1862 his father, William S. Jenks, and himself established the Phoenix Iron Works, which have been in existence ever since. A very successful business was built up under the management of Mr. Jenks. A few years ago the Jenks Shipbuilding Company were organized, with William S. Jenks as president and Orrin L. Jenks as vice-president and treasurer. The deceased, however, had been practically the director of the company from the date of their organization. Of late the company had embarked in the construction of steel vessels, three of which are now on the stocks in their yards.

GEORGE W. HALE.

George W. Hale, a retired iron merchant, died on the 8th inst, after a short illness, at his residence in Chicago. George W. Hale was born at Bridgewater, N. Y., in 1829. In 1834 his father, Samuel Hale, removed with his family to Kenosha, Wis., where for a quarter of a century he conducted a large general merchandise business. In 1859 the family removed to Chicago and Samuel Hale founded the iron firm of Hale & Ayer, for many years the largest of their kind in that city. The firm were burned out in the big fire, but in the following spring they built their large warehouse at Lake street and Michigan avenue. It was used afterward for some years by the Illinois Central Railroad and by S. D. Kimbark. After the death of his father and of John B. Ayer, the other partner in the firm, George W. Hale founded the firm of Hale, Cleveland, Bonnell & Co., who became the successors of Hale & Ayer. George W. Hale was the senior partner until 1882, when he retired from active business.

GEORGE J. ECKERT.

George J. Eckert, one of the best known citizens of Reading, Pa., who for the past 37 years has been a prominent manufacturer of fire brick in that city, died on February 10, aged 73 years.

PERSONAL.

John T. Wheeler, formerly in the purchasing department of the Grand Rapids & Indiana Railway Company, at Grand Rapids, Mich., has been appointed purchasing agent of the Sargent Company, at Chicago, with office at 675 Old Colony Building.

William White of Pittsburgh has just returned from a trip to Mexico.

Newton Parker, steel inspector for the Carnegie Steel Company, Limited, at Pittsburgh, has received an appointment as inspector of steel for the United States Navy, at Midvale Steel Works, Philadelphia, Pa.

James McKillips, who has been connected with the Bureau of Costs Department of the Carnegie Steel Company, Limited, has been promoted to the position of assistant auditor of the company, made vacant by the appointment of J. C. Campbell, recently made auditor.

Byron Robertson, traffic manager for the Pressed Steel Company of Pittsburgh, has resigned from the service of that concern.

Thomas Palmer, traffic manager for the American Steel Hoop Company of Pittsburgh, has resigned, and will engage in other business.

B. F. Jones, senior of Jones & Laughlins, Limited, Pittsburgh, has gone to Florida.

A. S. Hay of London expects to sail for home next week.

For the first time in the history of the Pittsburgh coal trade a large shipment has been made to the East by rail. The Pittsburgh Coal Company began the shipment last week of 600 cars of coal to the David Judson Coal Company of Troy, N. Y. The Lehigh Valley Railroad have asked bids for 750,000 tons of coal, to be delivered between March 1, 1900, and February 28, 1901.

MANUFACTURING.

Iron and Steel.

Work on the new Bessemer plant being built by the Republic Iron & Steel Company, at Youngstown, Ohio, is progressing rapidly, and it is expected to have the plant ready for operation within a couple of months. The contract for two soaking pit furnaces has been placed with Alex. Laughlin & Co., engineers and contractors, Lewis Block, Pittsburgh. A sub-contract for some machinery in connection with these soaking pits has been placed with the Lloyd Booth Company, Youngstown, Ohio.

The first of the three new blast furnaces of the National Steel Company, at Youngstown, Ohio, will be blown in this week.

It is stated on very good authority that a contract has been placed for the building of a large blast furnace and basic open hearth plant in Monongahela Valley, near Pittsburgh.

The Totten & Hogg Iron & Steel Foundry Company, Pittsburgh, Pa., builders of iron and steel works machinery, have received a contract from the Wilkes Rolling Mill Company, Sharon, Pa., for one 26-inch sheet mill, work on which will be commenced at an early date. The Totten & Hogg Company have also furnished a 24-inch continuous train with tables, together with a large lot of other machinery and castings, for the Howard Axle Works of the Carnegie Steel Company, Limited, at West Homestead, Pa.

Machinery.

At the annual meeting of the Hartford Machine Screw Company, Hartford, Conn., held last week, the following officers and directors were elected: President and treasurer, G. A. Fairfield; secretary, Daniel Morrell; assistant treasurer, J. K. Lanman; assistant secretary, J. W. Morrell. Directors—G. A. Fairfield, Charles M. Beach, Daniel Morrell, J. W. Morrell, William S. Andrews and J. K. Lanman.

The Morgan Engineering Company of Alliance, Ohio, were incorporated at Columbus, Ohio, February 9, with a capital stock of \$3,000,000, half of which is preferred and half common. The preferred stock is to bear 6 per cent. interest per annum, and the common stock is to take the remainder up to 6 per cent., after which both are to share alike. The company are to deal in hydraulic, electric, pneumatic, gas and power machinery, including guns and other ordnance supplies. The incorporators are William Henry Morgan, William H. Ramsey, Mrs. Marrie M. Ramsey, Nanette Sharer Morgan of Alliance, and E. N. Huggins of Columbus.

Edson Mfg. Company, 134 Commercial street, Boston, Mass., who manufacture patent trench pumps, force pumps, manhole and pile sinking pumps, &c., and the Edson odorless sewage disposal outfit, have leased the adjoining building, covering two numbers, and will add it to their present quarters. They will occupy the extension about March 1. The concern have recently made a large shipment of the Edson odorless sewage disposal outfits to Cuba, where others of the same style have been in use since the island has been under United States control.

The Babcock & Wilcox Company, builders of the well-known Babcock & Wilcox horizontal water tube boilers, have received a contract from the Carnegie Steel Company, Limited, for equipping the ore carriers of the Pittsburgh Steamship Company with 12,000 horse-power Babcock & Wilcox marine boilers. They have also received a contract recently from the Colorado Fuel & Iron Company of Pueblo, Col., for 6000 horse-power Babcock & Wilcox boilers. This concern are building large new shops at Bayonne, N. J., on the line of the Central Railroad of New Jersey. The Riter-Conley Mfg. Company of Pittsburgh have the contract for the iron buildings, which will be very large and which will be equipped with modern machinery for the manufacture of the Babcock & Wilcox type of boilers. In one month recently the Babcock & Wilcox Company took orders for about 87,000 horse-power boilers, the largest month's business in the history of the concern. All these orders were for the United States, no foreign business whatever being included. About April 1 the offices of the Babcock & Wilcox Company, now in Rooms 1012-1014 Carnegie Building, Pittsburgh, Pa., will be removed to Rooms 1217-1218 Empire Building, Fifth and Liberty streets, Pittsburgh, Pa.

The Lincoln Foundry Company of Pittsburgh, builders of rolls, are making small addition to their plant.

The Sergeant Mfg. Company, Greensboro, N. C., whose machine shop and office were burned on January 1, are about to commence to erect buildings much more substantial than those that were destroyed. The new machine shop, which will be 48 x 132 feet, of two stories, will be a combination of brick and iron. The saw mill manufacturing department was unaffected by the fire and has been kept running very busily. The equipment of the machine shop will be the most modern, and the company expect in a short time to be doing a larger and more widely extended business than ever.

The Salem Iron Works, Salem, N. C., are getting out a machine for making railroad cross ties, under the name of the Champlon cross tie machine, which is said to turn out a complete cross tie in less than a minute. The company are more crowded with orders in their various lines, more especially saw mills, than at any time in the history of the concern.

G. F. Glascock & Son, founders and machinists, Greensboro, N. C., had a very satisfactory trade last year in their general lines, as well as in the sale of their patent safety andirons. Work was also good in their jobbing shop.

The Underfeed Stoker Company of America were incorporated last week at Newark, N. J., with a capital of \$1,000,000, to manufacture an automatic stoker on what is known as the underfeed principle. Among the incorporators are several prominent business men of Toronto, including Geo. Gooderham, W. R. Brock, Thomas A. Rowan, James L. Ross, Elias Rogers, Lloyd Harris and James B. Dill. Of the capital stock, \$250,000 is a 7 per cent. cumulative preferred issue and \$750,000 common stock.

The machine shops of Sprout, Waldron & Co., Muncy, Pa., were totally destroyed by fire on February 7, involving a loss of nearly \$100,000, partly covered by insurance.

The Chicago Pneumatic Tool Company, Chicago, state that it is evident the smaller factories are making every effort to compete with the larger concerns by using labor saving devices. This company are receiving many inquiries for air compressing apparatus. This is supplied in any capacity, either for connection to present power or equipped with steam or gasoline engine, or with electric motor.

The Erie Pump & Engine Company of Erie, Pa., have recently bought the shops and plant of the old Davis-Farrar Company. The plan is to continue the business upon substantially the same lines, making centrifugal pumps and small vertical engines their leading specialties.

The General Fire Equipment Company, Charlotte, N. C., who commenced April 1, 1899, supply complete fire and steam heating equipments and deal largely in pipe, fittings, valves, and new and second-hand machinery. At present they are putting in an entire system of automatic sprinklers and hydrants for the Belton Cotton Mills, Belton, S. C., and a similar equipment with the addition of steam heating for the Orr Cotton Company, Anderson, S. C.

The Park Mfg. Company, Charlotte, N. C., manufacture a boiler feed pump and heater combined, the main feature of which is the variable stroke, which can be adjusted to meet the requirements of the boiler without stopping the pump and so making a continuous boiler feed. The company have a jobbing shop principally kept busy with cotton mill repairs.

At Pittsburgh the application of the Leechburg Foundry & Machine Company for a decree and dissolution was presented for final order last week. The company sold their plant a year ago to the Mesta Machine Company, and have on hand the sum of \$200,000 for distribution among the stockholders. Of this amount \$134,000 goes to George Mesta, the principal holder.

The Meadville Malleable Iron Company have been organized and will erect a plant at Meadville, Pa.

The Pittsburgh Meter Company of East Pittsburgh are receiving numerous orders for their low pressure regulator, especially adapted for securing a steady light in connection with the use of natural gas or the Welsbach light.

The Davies Casting Machine Company, Warren, Ohio, have just about completed the installation of a double machine for the Bethlehem Steel Company, South Bethlehem, Pa., of 900 tons capacity. They have also just about completed the building of a 400-ton machine for the Dunbar Furnace Company, at Dunbar, Pa. These two machines will be in operation in a very short time. The Davies Casting Machine Company have inquiries from other parties with reference to placing orders for the Davies casting machine, but the concern are not booking any orders until certain negotiations now under way have either been concluded or given up. The Davies casting machine is also being installed at the furnace plant of the Shenango Furnace Company, at Sharpsville, Pa.

Miscellaneous.

The Stephens Gas Improvement Company, capitalized in West Virginia at \$220,000, have been organized at New Castle, Pa., for the manufacture of gas making machinery. The incorporators are Eli Stephens, R. T. Vanvalkenburg of Muncie, Ind., and J. Ed. Duff, Samuel McCreary and R. D. Crawford of New Castle.

The Berlin Iron Bridge Company of East Berlin, Conn., have just completed two large highway bridges at Long Lake, N. Y., and are now putting up a 200-foot span at Stuyvesant Falls, N. Y., a large highway bridge at Hillsborough, N. H., and a two-span trolley bridge across the Naugatuck River at Waterbury, Conn.

W. D. Kent Iron Company of Chicago have been incorporated, with a capital of \$25,000, for the manufacture of architectural and structural iron. The incorporators are W. D. Kent, S. D. Snow and C. C. Ole, all of Chicago.

The Superior Fence Machine Company of Detroit, Mich., have been incorporated, with a capital of \$20,000, for the manufacture of fence machines, &c. The incorporators are C. D. Merritt, W. H. Smith and H. L. Minds, all of Detroit.

Gerst Bros. Mfg. Company, St. Louis, are greatly extending their operations in the manufacture of architectural iron work. Yard space has been increased 100 x 135 feet. Foundry is being equipped with a Colliau cupola to be served by a Green rotary blower with direct connected engine. The structural department has installed a 24-inch Long & Allstatter punch, Newton

cold saw and a double head rotary planer made by Riverside Iron Works, Kansas City. Overhead travelers are an added convenience and are provided with Weston triplex spur gear blocks.

The Berlin Iron Bridge Company of East Berlin, Conn., are putting up two large buildings for the National Coal Car Company at Everett, Mass.; a gas plant for the Peekskill Gas Company at Peekskill, N. Y.; a retort house for the Penn Yan Gas Light Company at Penn Yan, N. Y.; a large car barn and power house for the electric railroad at Montville, Conn.; the iron roofs for the new plant of the Nichols Chemical Company at New York; two large buildings for the J. H. Horn & Sons Company at South Lawrence, Mass.; a machine shop for the Wheeler & Wilson Mfg. Company at Bridgeport, Conn.; a new machine shop for the Norwalk Iron Works at South Norwalk, Conn.; a large steel building covering pier 13 at New York; a power house for the Middletown Gas & Electric Company at Middletown, N. Y., besides a large number of smaller contracts. They are running their plant full time and report business exceedingly brisk.

A charter has been granted to the Safety Fire Escape Company of Philadelphia, capitalized at \$100,000.

The American Brass Mfg. Company were incorporated in New Jersey by Frank W. Webb, Edwin Howland, Alan P. Smith, Jr., Julian J. G. McShane and William McShane, capital \$500,000, to continue the business of manufacturing plumbers' supplies now conducted by the Henry McShane Mfg. Company in Baltimore, Md. At the same time there was incorporated the F. W. Webb Mfg. Company to continue the business now conducted by the Henry McShane Mfg. Company in Boston.

The brass foundry of A. & T. McKenna, at 218-222 Third avenue, Pittsburgh, was slightly damaged by fire on Monday night, February 5. The fire will not interfere with the execution of orders. This firm are prepared to make to order light stamped work and small turned articles in brass, aluminum, &c.

The Youngstown Bridge Company, Youngstown, Ohio, recently shipped a 60-foot plate girder bridge for Havana, Cuba. The company have also completed a three-span bridge for the S. & G. Railroad to span the Savannah River. The center span is a plate girder 160 feet long.

The stockholders of the Manufacturers' Light & Heat Company of Pittsburgh have voted to increase the bonded indebtedness of the company from nothing to \$750,000.

At the annual meeting of the stockholders of the American Axe & Tool Company, held in Pittsburgh on February 7, the following directors and officers were re-elected: Directors: C. W. Hubbard, Sr., Geo. T. Lane, Ethan Rogers, F. T. Powell, J. H. Mann, Frank E. Mann, A. C. Mann, Robert Mann, Robert Gibson, C. H. Wier, C. W. Mackey, H. M. Knickerbacker, S. A. Rankin, J. H. Lockhart, C. W. Hubbard, Jr. Officers: C. W. Hubbard, Jr., president and treasurer; F. T. Powell, first vice-president; C. H. Wier, second vice-president; S. Winsor Baker, secretary; T. El. Moritz, assistant secretary.

The trustees of Columbia University have decided to establish courses in marine engineering and naval architecture in connection with the School of Mechanical Engineering. Professor Cathcart, formerly of the engineering department of the United States Navy, will be the head of the new department. The course will include boiler design, marine auxiliaries, appliances, materials and propelling machinery, as well as architectural design and mold loft practice. Designs for special vessels and machinery will be required as a graduation thesis from candidates for degrees. A course in locomotive engineering, under Prof. E. L. Custer, formerly of the Baltimore & Ohio Railroad, will also be started.

The Edison Electric Company are about to supply to Santa Ana, Cal., electricity generated at the Santa Clara River in the San Bernardino Mountains 100 miles away. The company are already supplying Los Angeles with electricity from the same source at a distance of 83 miles.

European advices state that several large German iron works have contracted for the entire output of the great mines of the Loussavara district in Norway, for a term of years. Deposits estimated to contain 233,000,000 tons of ore are said to have been discovered, and these will be developed by German capital.

The American Bell Telephone Company have absorbed the People's Telephone Company of New Orleans, La., who were an independent organization in that city, and will immediately begin the equipment of a long distance system, connecting New Orleans with New York, Chicago, Cincinnati and other cities.

The new plant of the Pennsylvania Lead Company, at Lockton, near Pittsburgh, is about ready for operation.

The Iron and Metal Trades.

In many branches of the Iron trade buyers and sellers are still pretty far apart, nor have events shaped themselves as yet to make an early breaking of the deadlock probable. So far as Pig Iron is concerned, there are reports that some important sales of Foundry Iron have been made for shipment abroad. One block of 20,000 tons is spoken of. It appears, too, that negotiations are pending for the sale of considerable quantities of Basic Pig for Germany, to be delivered during the second half of this year. The rise in prices in Europe and the continued heavy consumption may prove the most potent factors in steadying values here. Pittsburgh again reports sales of magnitude of Bessemer Pig for the first half of the current year, and little significance is attached to the easing of prices in small lots offered by second hands.

It is understood that conferences have taken place between the leading producers of Steel Billets and a very large consuming interest. Propositions and counter propositions have been made, involving about 100,000 tons of Steel, but the negotiations have been broken off. In the meantime a moderate business is going on the basis of \$33 at mill in the Central West. At least one good sale of Sheet Bars is recorded.

In Finished Iron and Steel we may note the contract made by the National Tube Company for the delivery of 40 miles of Pipe to Guadalajara, Mexico.

Some good orders are coming up for Structural Material, and the bridge shops continue busy. In this branch the prospects are very satisfactory.

The car builders continue to be good buyers of Bars and Shapes, and new business is constantly coming up.

The Plate trade is still weak in spite of the fact that some lots of magnitude have been placed lately.

In the Steel Rail trade there is some complaint of shading on light sections, while in the standard sections the outside lots previously referred to are still unsold. It is understood that an arrangement has been arrived at between the Rail makers and the latest addition to the ranks of producers by which some tonnage is guaranteed.

In the Metal trade Tin has continued its upward movement and has now crossed 30c. per pound.

The long pending sale of Lake Copper to the leading manufacturers of the Naugatuck Valley seems to have been consummated. Report has it that the Calumet & Hecla Company placed 15,000,000 to 20,000,000 pounds on the basis of 16c. per pound, the buyers presumably being guaranteed against a decline.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type.
Declines in Italics.

	Feb 15, 1900.	Feb 8, 1900.	Jan 17, 1900.	Feb 15, 1899.
PIG IRON :				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$22.50	\$22.75	\$22.75	\$12.25
Foundry Pig, No. 2, Southern, Cincinnati.....	20.25	20.25	20.25	12.00
Foundry Pig, No. 2, Local, Chicago.....	23.50	23.50	23.50	12.50
Bessemer Pig, Pittsburgh.....	24.90	24.90	24.90	11.50
Gray Forge, Pittsburgh.....	21.00	21.00	21.25	11.25
Lake Superior Charcoal, Chicago....	25.00	25.00	25.50	12.50
BILLETS, RAILS, ETC. :				
Steel Billets, Pittsburgh.....	33.00	33.00	34.00	18.00
Steel Billets, Philadelphia.....	36.50	36.50	37.00	20.50
Steel Billets, Chicago.....	nom	nom	nom	20.00
Wire Rods, Pittsburgh.....	nom	nom	nom	...
Steel Rails, Heavy, Eastern Mill....	33.00	33.00	35.00	20.00
Spikes, Tidewater.....	2.65	2.65	2.65	1.50
Splice Bars, Tidewater.....	2.25	2.30	2.30	1.15
OLD MATERIAL :				
O. Steel Rails, Chicago.....	19.00	19.00	18.00	8.00
O. Steel Rails, Philadelphia.....	22.00	23.00	21.50	...
O. Iron Rails, Chicago.....	23.50	23.50	25.00	14.00
O. Iron Rails, Philadelphia.....	26.00	26.00	26.00	13.75
O. Car Wheels, Chicago.....	24.00	24.00	21.00	13.00
O. Car Wheels, Philadelphia.....	22.00	22.00	20.50	11.00
Heavy Steel Scrap, Chicago.....	17.00	17.50	18.00	8.00
FINISHED IRON AND STEEL :				
Refined Iron Bars, Philadelphia....	2.20	2.20	2.20	1.20
Common Iron Bars, Youngstown....	2.15	2.15	2.15	1.05
Steel Bars, Tidewater.....	2.40	2.40	2.40	1.20
Steel Bars, Pittsburgh.....	2.20	2.20	2.25	1.10
Tank Plates, Tidewater.....	2.35	2.35	2.40	1.60
Tank Plates, Pittsburgh.....	2.20	2.20	2.20	1.50
Beams, Tidewater.....	2.40	2.40	2.40	1.45
Beams, Pittsburgh.....	2.25	2.25	2.25	1.30
Angles, Tidewater.....	2.40	2.40	2.40	1.35
Angles, Pittsburgh.....	2.25	2.25	2.25	1.20
Skelp, Grooved Iron, Pittsburgh....	1.90	1.90	2.05	1.25
Skelp, Sheared Iron, Pittsburgh....	2.25	2.25	2.35	1.35
Sheets, No. 27, Chicago.....	3.00	3.00	3.00	2.20
Sheets, No. 27, Pittsburgh.....	2.90	2.90	2.85	2.05
Barb Wire, f.o.b. Pittsburgh.....	3.80	3.80	3.80	2.10
Wire Nails, f.o.b. Pittsburgh.....	3.20	3.20	3.20	1.60
Cut Nails, Mill.....	2.50	2.50	2.50	1.35
METALS :				
Copper, New York.....	16.00	16.25	16.25	18.00
Spelter, St. Louis.....	4.60	4.65	4.30	6.00
Lead, New York.....	4.70	4.70	4.70	4.50
Lead, St. Louis.....	4.60	4.60	4.67 1/2	4.30
Tin, New York.....	30.10	29.25	26.50	23.75
Antimony, Hallett, New York.....	9.75	9.75	9.75	9.75
Nickel, New York.....	38.00	38.00	38.00	38.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York.....	4.84	4.84	4.81	3.44

Chicago.

Office of The Iron Age, 905 Fisher Building, CHICAGO. February 12, 1900.

General conditions continue about as reported the past two or three weeks. Business is increasing moderately in some branches, but in other directions trade is quiet and buyers are holding off in the expectation of lower prices. Considerable confidence is expressed by manufacturers and sales agents, who believe that as spring approaches the general demand must surely become much greater. Consumption is on a large scale, and it is an undoubted fact that many of the heavy consumers are not in possession of much stock and are obliged to purchase frequently to keep their works in operation. The arguments seem to be more strongly in favor of values being sustained than that prices will show much decline. Railroads are having remarkably good traffic, notwithstanding the fact that shipments of grain are now much below what they were last year at this time, which is caused by farmers holding their grain for better prices. Traffic managers state that the longer such shipments are held back the heavier will be the movement during the spring months. Railroad business is so excellent that the railroads continue to be good buyers of all kinds of manufactured products.

Pig Iron.—Although some large inquiries are in the market, and a fairly good demand exists for small quantities, the actual condition of trade the past week has been one of quietness. Some of the large buyers who had been expected to place contracts by this time for the last half of the year have withdrawn inquiries and will take their chances a little later. Others, however, are not fully covered for the present, and these are compelled to continually enter the market and make purchases, which they are doing in small quantities. The supply of ordinary Foundry Iron and of High Silicon Iron appears to be growing larger, as deliveries are now being made more promptly. Prices of these classes of Iron are not so firmly held as they were a month back, although the leading furnace companies are still continuing to quote the prices named by them for the past couple of months. They insist that at an early day their position will be justified. Manufacturers of Malleable Bessemer

occupy the strongest position in this market. The malleable casting works are consuming large quantities and appear to be taking up the entire production of furnaces making this class of product. The scarcity of Coke continues, and some of the furnaces in this locality have been obliged to bank to await a better supply. Local iron is, therefore, held very firmly. We quote for cash as follows:

Lake Superior Charcoal.....	\$25.50 to \$26.00
Local Coke Foundry, No. 1.....	24.50 to 25.00
Local Coke Foundry, No. 2.....	23.50 to 24.00
Local Coke Foundry, No. 3.....	22.50 to 23.00
Local Scotch, No. 1.....	25.00 to 25.50
Ohio Strong Softeners, No. 1.....	24.50 to 25.50
Southern Silvery, according to Silicon..	25.50 to 27.00
Southern Coke, No. 1.....	22.85 to 23.35
Southern Coke, No. 2.....	21.85 to 22.35
Southern Coke, No. 3.....	20.85 to 21.30
Southern Coke, No. 1 Soft.....	22.85 to 23.35
Southern Coke, No. 2 Soft.....	21.85 to 22.85
Foundry Forge.....	20.85 to
Gray Forge and Mottled.....	20.85 to
Southern Charcoal Softeners, according to Silicon.....	21.85 to 25.85
Alabama and Georgia Car Wheel.....	24.85 to 25.85
Malleable Bessemer.....	25.00 to 26.00
Standard Bessemer.....	.... to
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	32.30 to 32.80

Bars.—A further improvement is observed in the demand for both Bar Iron and Soft Steel Bars. Buyers are scattered over all classes of consumers, and most of their orders call for quick delivery. The volume of business for the past week has been the largest for a long time, although confined for the most part to small lots. The Lakeside mill at Hammond, which has been idle for several years, is reported sold to Ohio parties for the purpose of manufacturing Merchant Iron. Mill shipments continue to be quoted at 2.30c. to 2.40c. Chicago, for Common Iron, 2.35c. to 2.45c. for Soft Steel Bars, and 2.65c. for Bands. Jobbers quote small lots from stock at 2.90c. for Bar Iron, 2.60c. to 2.65c. for Soft Steel Bars, and 4c. for Norway and Swedish Iron.

Car Material.—Car builders are securing numerous additional orders for cars, and their purchases of material, principally of Shapes and Axles, have been quite heavy during the past week. Some are inquiring for round lots of Bar Iron.

Structural Material.—The labor trouble in the local building trade has at last reached a crisis, and this week building operations have been almost completely stopped in this city. This causes all building projects to be postponed, and if the labor troubles continue a considerable length of time it is possible that some important operations will not be attempted this year. The demand for Structural Shapes has been quite light, particularly for building purposes. Prices are firm and unchanged. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15-inch and under, and Angles, 3 to 6 inches, 2.40c.; Beams, &c., 18 inches and over, and Angles over 6 inches and under 3 inches, 2.50c.; Tees, 2.45c.; Universal Plates, 2.45c. to 2.60c. Local yards are quoting small lots of Beams and Channels at 2.90c. to 3c.; Angles, 2.70c. rates, and Tees, 2.85c.

Plates.—Few orders are now being received for mill shipments, as buyers not in immediate need of Plates are waiting until satisfied that the market has touched bottom. Mill representatives are more confident than they have been that prices are getting on a firm basis, and fewer reports are in circulation of extremely low rates being made. The demand from store shows some improvement. Quotations on ordinary mill shipments, Chicago delivery, are as follows: Tank, 2.45c. to 2.50c.; Flange, 2.65c. to 2.85c.; Marine, 3c. to 3.25c.; Fire Box, 3.30c. to 5½c. Jobbers quote Tank from store at 2.80c. to 3c., and Flange, 3c. to 3.25c.

Merchant Pipe.—Buyers are taking hold sparingly, notwithstanding the reported low stocks. Carload lots of Black Merchant Pipe are quoted at 50, 10 and 5 to 50 and two 10's, and Galvanized Pipe at 57 and two 10's.

Sheets.—Inquiries are being received, but few large buyers are closing, most of them are watching developments as to the proposed Sheet mill consolidation. They would probably place orders at once if they were convinced that the consolidation would be consummated. It is probable that they would rather pay higher prices after the consolidation than place contracts now and have the project fall through, with the possible effect of making prices lower. Mill shipments are quoted at 2.95c. to 3.15c., Chicago, for No. 27 Black, and 75 and 5 for Galvanized Sheets. Jobbers are having a continued good demand for small lots from stock, quoting 3.30c. to 3.45c. for No. 27 Black and 70 and 10 per cent. off on Galvanized.

Merchant Steel.—Purchases are still confined to moderate quantities. Few inquiries for large lots are expected at this time of the year. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Ma-

chinery Steel, 2.95c. to 3.05c.; Smooth Finished Tire, 2.80c. to 3c.; Open Hearth Spring Steel, 3.60c. to 3.75c., base; Toe Calk, 3.20c. to 3.50c., base; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, 3.45c. to 3.65c.; Ordinary Tool Steel, 7c. to 7½c.; Special, 13c. and upward.

Rails and Track Supplies.—A great deal of inquiry is being received for Rails of Standard Sections, and some transactions are likely to be closed within a few days. Manufacturers hold prices firmly at \$35 to \$40, according to quantity. A good business is being done in Rails of light sections, almost every week showing some sales for export as well as for domestic consumption. Prices are still maintained at \$35 to \$40, according to section. Prices of Track Fastenings are as follows: Steel Fish Plates, 2.25c. to 2.50c.; Iron Fish Plates, 2.30c. to 2.50c.; Spikes, 2.65c. to 2.75c.; Track Bolts, with Hexagon Nuts, 3.95c. to 4c.; Square Nuts, 3.80c. to 3.85c.; Steel Links and Pins, 3.20c.; Iron Links and Pins, 3.15c.

Old Material.—The supply of all kinds of Scrap appears to be increasing rather than diminishing. Offers by small dealers are now of larger quantities than they are ordinarily handling. Prices are in some cases a little lower than recently quoted. Old Car Wheels are firmly held, being quite scarce. Approximate market prices are as follows, per gross ton:

Old Iron Rails.....	\$23.50 to \$24.50
Old Steel Rails, mixed lengths.....	19.00 to 20.00
Old Steel Rails, long lengths.....	21.50 to 22.50
Relaying Rails.....	28.00 to 30.00
Old Car Wheels.....	24.00 to 24.50
Heavy Melting Steel Scrap.....	17.00 to 18.00
Mixed Steel.....	12.50 to 13.00
Iron Fish Plates and Angle Bars.....	23.50 to 24.00
Steel or Mixed Iron and Steel ditto.....	19.00 to 20.00
Iron Car Axles.....	27.00 to 28.00
Steel Car Axles.....	24.00 to 25.00
No. 1 Railroad Wrought.....	22.50 to 23.00
No. 2 Railroad Wrought.....	19.00 to 19.50
Shafting, Iron and Soft Steel.....	19.00 to 20.00
No. 1 Wrought.....	16.00 to 17.00
No. 1 Country Wrought.....	14.00 to 15.00
No. 1 Mill.....	11.00 to 11.50
No. 2 Mill.....	7.50 to 8.00
No. 1 Busheling.....	13.50 to 14.00
No. 2 Busheling.....	9.50 to 10.00
Iron Car Axle Turnings.....	14.00 to 15.00
Soft Steel Car Axle Turnings.....	13.00 to 14.00
Machine Shop Turnings.....	12.00 to 13.00
Wrought Drillings.....	11.00 to 12.00
Cast Borings and Drillings.....	8.50 to 9.00
Mixed Borings and Turnings.....	8.50 to 9.00
No. 1 Bolders, cut.....	12.50 to 13.00
No. 2 Bolders, cut.....	6.00 to 6.50
Boiler and Ship Scrap.....	15.00 to 16.00
No. 1 Cast.....	13.50 to 14.50
No. 2 Cast.....	9.00 to 9.50
Railroad Malleable Cast.....	15.00 to 15.50
Agricultural Malleable Cast.....	13.50 to 14.00

Metals.—Carload lots of Lake Superior Copper are unchanged at 16½c., and Casting brands 16½c. Spelter is steady, carload lots being quoted at 4.90c. to 5c. Pig Lead is firm but unchanged at 4.65c. for Desilverized, and 4.75c. Corroding, for February and March.

Charles W. Davenport, Iron and Steel broker, has removed his office to room 616 at 36 La Salle street, Chicago, from his old quarters in the Jones & Laughlins Building, on West Lake street, which had been occupied by him for many years.

Pittsburgh.

Office of The Iron Age, Hamilton Building, Pittsburgh, February 14, 1900.

(By Telegraph.)

Pig Iron.—Additional purchases of round lots of Bessemer Pig Iron by leading Steel interests are reported at the full price of \$24, Valley furnace. So far as we can learn nothing of any account has been done in Bessemer Pig for the second half, but it is probable that \$24 would be materially shaded for that delivery. A few stray lots of Bessemer Iron, ranging from 500 to 1000 tons or more, are being offered by brokers and middlemen at \$24.50, Pittsburgh. There is a good deal of inquiry for Gray Forge, and round lots have been sold at \$21 to \$21.75, Pittsburgh. Southern Forge is offered at \$20.50, Pittsburgh. No. 2 Foundry is only fairly strong at \$23, Pittsburgh. We quote: Bessemer, \$24, at Valley furnace, the association price; No. 2 Foundry, \$23; Southern Gray Forge, \$20.50; Local Forge, \$21 to \$21.25; Bessemer, \$24.50 for small lots and \$24.90 in round lots from furnaces, all f.o.b. Pittsburgh. We note sales of Standard Bessemer at \$24, Valley furnace, and one lot of 500 tons at \$24.50, Pittsburgh. We also note a sale of 5000 tons of Gray Forge for extended delivery at \$21.25, Pittsburgh, and 1000 tons for prompt shipment at \$21, Pitts-

burgh. Also a sale of 500 tons of No. 2 Soft Foundry Iron at \$23, delivered f.o.b. Pittsburgh.

Steel.—While the Steel market is quiet, it is said to be slightly improved as regards demand. We note a sale of 3000 tons to an Eastern consumer, also a sale of 2000 tons at a price slightly lower than \$35, maker's mill; also a sale of 500 tons at \$35, Pittsburgh. The market seems to be fairly strong at \$34 to \$35, maker's mill.

Sheet Bars.—We quote nominally at \$35 at mill for long lengths. There is practically nothing doing.

Muck Bar.—We quote Standard grades at \$33 to \$33.25, Pittsburgh. Some brands are being offered as low as \$32.50.

Skelp.—The Skelp market seems to be slightly stronger in tone. The minimum price of Grooved Iron or Steel is 1.95c., Pittsburgh. We note a sale of 2500 tons of Grooved Skelp at 1.97½c., Pittsburgh.

Coke.—Very fancy prices are being paid by large consumers for both Furnace and Foundry Coke. We are advised that Furnace Coke in large lots has sold at \$3.50 a ton, and Foundry Coke for prompt shipment as high as \$4 and \$4.25 a ton. There is an enormous demand for Coke, and it can hardly be had at any price.

Scrap.—We note a sale of 100 tons of Country Mixed Steel Scrap at \$17.50, delivered, Pittsburgh.

(By Mail.)

Tonnage in both finished and raw material since the first of the year has been far below what had been expected. This can probably be largely accounted for by the fact that nearly all buyers throughout the country believe that materially lower prices will rule over first half of the year, and are only purchasing to cover their actual needs instead of placing liberal orders, as is usual at this season of the year. The outlook for spring trade is only fair, and owing to the very high prices prevailing on all kinds of Iron and Steel it is not expected that demand will be as heavy as in former years. Pig Iron is strong at \$24, Valley furnace, for large lots, but small lots are being offered at \$24.50, Pittsburgh, or lower. Steel is quoted at \$33 to \$34, maker's mill. There have been no important changes in prices of Finished Material, but the tendency on some lines is toward lower values.

Ferromanganese.—We quote domestic at \$125 for small lots. For large lots this price would be shaded.

Plates.—The Carnegie Steel Company, Limited, are now furnishing to the Pressed Steel Car Company about 1200 tons of Plates daily, which would guarantee about 400,000 tons for a year. With the increase in capacity being made at the McKee's Rocks plant of the Pressed Steel Car Company it is likely this tonnage will be increased to 1600 tons per day before long. The Pressed Steel Car Company expect to make from 125 to 140 cars daily soon, and about 12 tons of Plates and other shapes are used in each car. The prices on Plates furnished by the Carnegie Steel Company to the Pressed Steel Car Company are based on the price of Bessemer Pig Iron f.o.b. Pittsburgh. The general demand for Plates is only fair and prices do not show any improvement. We quote Tank Plate, ¾-inch and heavier, at 2.25c. for wide sizes. Shell is 2.40c. to 2.50c.; Flange, 2.50c. to 2.60c.; Marine, 2.60c. to 2.70c.; Fire Box, 3c. to 3.50c., depending on quality. We note a sale of a round lot of Basic Sheared Plates. For narrow sizes the above price might be shaded by some mills.

Structural Material.—No large contracts have recently been given out, but a good many small orders are being placed which aggregate considerable tonnage. The Structural mills are well filled up with work and the outlook for this year is that consumption of Structural Material will be the heaviest ever known, in spite of the present high prices. We quote: Beams and Channels, 15-inch and under, 2.25c.; over 15-inch, 2.35c.; Angles, 3 to 6 inch, 2.25c.; Angles, smaller than 3-inch and larger than 6-inch, 2.35c.; Flat Bars, 2.25c.; Pins, 2.25c.; Grooved Rolled Plates, 2.30c. to 2.35c.; Universal Mill Plates, 2.35c.; Tees, 3-inch and larger, 2.30c.; Zees, 3-inch and larger, 2.25c. all f.o.b. Pittsburgh.

Bars.—The Bar trade remains in practically the same condition noted in this report last week. A fair amount of orders is being placed, but they are mostly for small lots. Buyers continue to be apprehensive of lower prices and are buying only as actual needs demand. We quote Iron Bars, Valley mill, at 2.15c. and Steel Bars at 2.20c., half extras. Pittsburgh mills quote Steel Bars and Refined Iron Bars at 2.25c. at mill, half extras.

Merchant Steel.—Demand is quiet and low prices are being made by some mills that are in need of tonnage. The trade are buying only in small lots for immediate wants. We have reduced prices on several lines and now quote: Soft Machinery Steel, 2.40c. to 2.50c.; Tire, 2.50c. to 2.60c.; Toe Calk, 2.75c. to 3c.; Open Hearth Spring, 3.25c. to 3.50c.; Sleigh Shoe, 2.50c. to 2.75c.; Cutter Shoes, tapered and bent, 3.75c.; Rolled Lay Steel, 3.75c.; Hammered Lay Steel, 4.25c. to 4.50c.; Plow Slabs, 2.75c. to 3c.; Pick, Cant Hook and Wedge Steel, Open Hearth, 4c.; Crucible, 5c.; Tool Steel, 7c. and upward; freight allowance not to exceed 25c.; terms, except Tool Steel, 30 days net cash. The lower prices quoted above are for carloads and the higher prices for small lots.

Sheets.—The probability is that the deal for the consolidation of the Sheet mills will be put through in a short time. We understand that only four mills, three in the Pittsburgh and one in the Wheeling district, are not included. It is expected that prices will be higher in the event of the consolidation being effected. Some mills are refusing to meet present prices and are only running one or two mills. We quote No. 27 Black Sheets at 2.90c. to 3c.; No. 28, 3c. to 3.10c. Some mills are holding for the higher prices. The market on Galvanized Sheets is strong and we quote at 75 and 5 per cent. at mill, with 15c. freight.

Skelp.—There is nothing new to report in the Skelp trade, which continues quiet, with prices only fairly strong. We quote Grooved Iron and Steel Skelp for ordinary widths at 1.90c. to 2c. Special stock for Boiler Tubes is quoted at 2.10c. to 2.25c. We quote Sheared Iron and Steel Skelp at 2.25c. to 2.35c., f.o.b. Pittsburgh.

Pipes and Tubes.—The New York office of the National Tube Company have just closed a contract for 40 miles of the Converse Lock Joint Pipe for the Guadalajara Water Works, at Guadalajara, Mexico. The sizes range from 3 inches to 18 inches, and the order will take from two to three months to fill. The new prices on Black and Galvanized Pipe, referred to in this report last week, will not be ready for the trade before February 20 and possibly March 1. We quote: Black Pipe in carload lots 50 and 10 and 10 per cent., and Galvanized pipe at 57, 10 and 10 per cent., delivered. Small lots of Black are quoted at about 50 and 10 per cent. at mill, and Galvanized 57 and 10 per cent. at mill. We quote Screw and Socket Joint Casing at 37½ per cent.; Inserted Joint, 32½ per cent., with optional 5 per cent. to dealers. We quote Boiler Tubes as follows: 1½-inch and 1¾-inch Iron, 40 per cent.; Steel, 40 per cent.; 1¾ to 2½ inch Iron, 50 per cent.; Steel, 55 per cent.; 2¾-inch and larger Iron, 52½ per cent.; Steel, 55 per cent., with an extra 5 per cent. in carloads; less than carloads, f.o.b. maker's mill, Pittsburgh, while carloads are delivered.

Connellsville Coke.—Last week 19,360 ovens in the Connellsville region were active and 632 idle, the output being 214,757 tons. There were no changes of any importance made in the region during the week, all the plants being run to full capacity, and new additions are made to the active list of ovens only when new ovens are ready for firing. No large orders for Coke are being placed, but for small lots for prompt shipment from \$2.75 up to \$3.25 is being quoted for Furnace Coke and from \$3 to \$3.50 for Foundry Coke.

The offices of Anderson, Du Puy & Co., Pittsburgh Steel Works, now located in Iron Exchange Building, Wood and Water streets, will be removed about April 1 to the Empire Building, Fifth and Liberty streets, Pittsburgh.

Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets, CINCINNATI, February 14, 1900.

While the actual volume of new business in Pig Iron has been small, perhaps smaller than for some weeks past, yet the market shows a stiffer front than at any time during the past month. The deadlock between buying and selling interests still holds out, and at this writing it looks as though buyers will have to make the first break. The soft spots of the past few weeks seem to have disappeared and offerings at less than standard quotations have either been taken up by buyers or withdrawn by sellers. The dullness at this time when it is certain that there are lots of buyers in need of Iron is accounted for only on the ground of a very strong feeling among the furnaces. Buyers are showing a quiet interest in the situation and appear to be keeping closely in touch with the market. A strong buying movement may set in any day or it may hold off for a month yet. In the absence of trading the price-list is unchanged.

with emphasis more especially upon the maximum figures. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$21.50 to \$21.75
Southern Coke, No. 2.....	20.50 to 20.75
Southern Coke, No. 3.....	19.50 to 19.75
Southern Coke, No. 4.....	18.75 to 19.25
Southern Coke, No. 1 Soft.....	21.50 to 21.75
Southern Coke, No. 2 Soft.....	20.50 to 20.75
Southern Coke, Gray Forge.....	18.75 to 19.25
Southern Coke, Mottled.....	18.75 to 19.25
Ohio Silvery, No. 1.....	..... to 30.00
Ohio Silvery, No. 2.....	..... to 29.00
Lake Superior Coke, No. 1.....	22.75 to 23.75
Lake Superior Coke, No. 2.....	21.75 to 22.75

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, Chilling, Grades.....	\$25.75 to \$26.25
Standard Southern Car Wheel, No. 2.....	24.75 to 25.25
Lake Superior Car Wheel and Malleable.....	25.50 to 26.50

Plates and Bars.—Prices are unchanged and the market is strong and fairly active. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 2.25c., with half extras; small lots, 2.60c., with full extras; Bar Steel, in car lots, 2.50c., with half extras; small lots, 2.95c., with full extras; Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 2.55c.; small lots, 2.80c.; Sheets, No. 10, 3c. to 3.15c.; No. 27, Stove Pipe, 3.25c.; No. 27, Steel, 3.35c.; Plates, 2.75c. to 3c.

Old Material.—The market is quiet and steady on an unchanged basis. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$20 to \$21 per net ton; Cast Scrap, \$12 to \$13 per gross ton; Axles, \$25 per net ton; Iron Rails, \$24 per gross ton; Car Wheels, \$22 to \$22.50 per gross ton.

Cleveland.

CLEVELAND, February 13, 1900.

Iron Ore.—The sales market is gradually becoming characterized by greater activity, and this may reasonably be expected to continue regularly. There is Ore on the market, and while the transactions in progress are exceptionally small, they represent in the aggregate a heavier movement than might be generally supposed. The present week, or a short time hence at the furthest, will see heavy sales of Pig Iron for delivery during the third quarter of 1900, and this is pretty certain to be the signal for further buying of Ore. A number of furnacemen have their supply for 1900 covered, but it is thought that these latter will, as soon as the Pig Iron transactions for the third quarter commence, begin buying for the first quarter of 1901. Then, too, it must be remembered that very few furnacemen have contracted for all the Ore which they will need this year. If production keeps up at the present pace there is scarcely a furnace but will need to have additional supply. The general impression among sales agents is that sales for 1901 will be made on just about the same basis of prices as have prevailed for some time past. The producing companies are very emphatic in the declaration that they have not overestimated the capacity for production of their mines. Justification of their confidence is found, for one thing, in the practical certainty of a long season of navigation, and to take full advantage of this preparations are already being made. It may be judged from such information as is available that the all rail shipments of Ore from the Lake Superior district are no heavier than usual at this season of the year and there is, therefore, every likelihood that all loading docks will be well stocked at the opening of navigation. In the transportation market scattering transactions continue. One of the vessel charters, which will indicate the estimate being placed upon tonnage, is that closed up within a few days whereby the "Case" is leased to carry Ore for the season at the lump sum of \$40,000. Several vessels of the Bradley fleet, wooden vessels which carry about 3000 tons each, have just been chartered to carry one cargo of Ore per month from Marquette and the head of Lake Superior to Detroit, where the material is consigned to the Gaylord Iron Company. The rate is \$1.25 per ton from Marquette to Detroit, and \$1.45 from Duluth to Detroit. Contracts such as the one cited usually require for their fulfillment vessels of a special class. There is some tonnage offering for charters from Marquette and Escanaba, but very little from the head of the lakes. Indeed, so many vessels have been tied up under season contracts that it is a mystery where any considerable amount of wild tonnage is to come from. Presumably, however, the Rockefeller fleet must be taken into consideration in this connection, for the Rockefeller representatives in their "corner" of the Ore carrying tonnage market last autumn tied up vessels of 2,000,000 tons aggregate capacity in excess of what is needed for the transportation of Rockefeller Ore. As a rule those interests which have secured tonnage in any considerable extent since the general scramble some months ago are those like M. A. Hanna

& Co., who have Coal interests also and are able to offer especially advantageous charters. In passing it may be noted that with the Ore and Coal rates established boats will receive a round trip freight of \$1.75 per ton. This means that one of the larger size vessels (6000 tons capacity) will have gross receipts of \$10,000 for each ten-day trip, and inasmuch as many of these vessels carry no insurance, the operating expenses may be conservatively estimated at \$3000 per trip, which would leave a net profit of over \$700 per day.

Pig Iron.—The market has shown more activity than in weeks past. The large sale of Bessemer at \$24 in the Valley, which was closed last week, cleans up practically the entire supply available until July 1. There are also signs of an immediate opening of the Bessemer market for the third quarter. It is understood that three of the leading Steel manufacturers have asked the Bessemer Furnacemen's Association to make prices for the third quarter, and a meeting will likely be held here the latter part of this week or the first of next to take action in the matter. A majority of the members seem to incline to the opinion that \$24 is a fair price for third quarter material, but there is some sentiment in favor of an advance. The fixing of the price on Bessemer, it may be anticipated, will be speedily followed by a general activity in Foundry grades. A better movement in the latter is already noticeable, but the larger buyers are still holding off, hoping for a break in the market. Some buyers who adopted the subterfuge of reporting themselves as supplied to July 1, in the hope that the market would break, have during the past week asked for proposals for second quarter supply. The existence in many cases of circumstances such as this make it certain that the buyers will be forced into the market before long now. Gray Forge is extremely scarce and \$21.50 is given as the nominal quotation, where any is obtainable. The supply of Lake Superior Charcoal is no more satisfactory and practically none can be found on Lake Erie docks. The Foundry grades are continued at the same quotations, \$22.50 for No. 2 and \$23 for No. 1. Less is heard regarding a shortage of Coke supply than a few weeks since, and is not anticipated that even should further advances be made in the price of the fuel it will have any effect upon Pig Iron prices. The cold weather which prevailed during a portion of last week retarded the receipt of supplies of Ore from stock piles. In some cases the movement was almost suspended, and inasmuch as some furnaces are virtually dependent on daily supply, some slight inconvenience was caused.

Finished Material.—The past week has been on the whole rather more satisfactory than its predecessor, but there have been no transactions of great moment. Most of the sales agents report inquiry and the order mail fairly satisfactory. Business aggregating 12,000 tons of Sheet Bars, which was up some weeks ago, is again the subject of negotiation, and an order for a small portion of the aggregate is practically closed. There was an inquiry for some 700 tons of Rails from the Cleveland, Berea, Elyria and Oberlin interurban electric line, but the matter will be held in abeyance for a time. The American Ship Building Company, wishing to give an option on the construction of two steel vessels of the larger size, called for proposals on 2500 tons of Plates and 1500 tons of Shapes. Many sales agents were prevented from figuring by the execution of an agreement to make delivery next month. A local concern has, it is understood, secured the Plate business, which would seem to be significant of the state of the Plate market in general. The latter cannot be said to be any firmer and it is asserted from some sources that a further weakening is manifest. The shading of prices still goes on, although in some cases the quotations out of stock have not been changed. Sheets and Pipe have shown no fluctuation. The local office of the Carnegie company secured the contract for 900 tons of Structural for a new building to be erected at Toledo. The only business in sight is about 600 tons for a new car barn to be erected by the Little Consolidated Street Railway Company of this city. There is every prospect of a lively season in the construction of brick and steel structures of the larger size, two skyscrapers of 18 and 24 stories, respectively, having been projected within the past two weeks, but the cold weather which has prevailed of late has rather retarded movement in this direction.

Old Material.—Dealers are anxiously awaiting an opening of the Pig Iron market, in the hope that it will have the effect of increasing the volume of business in Scrap. For the past two weeks there has been little doing, nor has the supply been coming in very freely. There have been some sales of old Steel Rails and a little movement in Car Wheels. Quotations are as follows: Steel Melting Stock, \$22 gross; No. 1 Cast, \$16 net; No. 1 Wrought, \$22.50 net; Car Wheels, \$24 gross; Iron Rails, \$25 gross; Turnings, \$14 net, and Borings, \$12 net. The quotation on Iron Rails is nominal, no sales having been reported.

Philadelphia.

Office of The Iron Age, Forrest Building, }
PHILADELPHIA, PA., February 13, 1900. }

Again we have to report a dull and featureless market with no very definite indications as to what may be its course in the near future. Buying is undoubtedly on a smaller scale than is considered desirable for the maintenance of prices, but there is still a very general belief that the lull is only temporary, and that in a little while buying will be active enough to fully offset the present dullness. The delay is getting to be wearisome, however, and in the hope of encouraging business strictly firm prices are not quoted with the rigidity which was so noticeable a year ago, but, on the contrary, buyers are invited to say what they think they ought to pay, and if they are fairly in line with last week's quotations there is no difficulty in securing ample supplies. This, of course, is the weak side of the market, but there is another side also. Stocks are kept down to an unusually low point, and although production is increasing, iron, if not exactly scarce, is certainly not plentiful, although once in a while misfit iron comes on the market at comparatively low prices. It may be taken for granted, however, that unless there is some falling off in consumption (of which there are at present no indications) buying must soon commence at a lively rate. Some well informed people express the opinion that in a month from now there will be as much activity as there was a year ago, and that prices will again be on the up turn. Conditions are too uncertain for very positive predictions, however, but within the period named there is at least as much chance, if not more, for an upturn than for a decline, although there is no disputing the fact that at the moment the market is dull and prices are weak. To use a slang expression, the market needs to "get a move on it," which once accomplished, a stiffening in prices would soon follow.

Pig Iron.—Changes from last week are so slight as to practically amount to nothing. Buyers are extremely careful in their operations, so that the bulk of the business is confined to small lots for immediate shipment. As regards late deliveries there is very little disposition to do anything, and so long as that continues, makers of iron are just biding their time. The strong feature of the situation is the continued bareness of stocks, and as we are now supposed to be getting to the end of the winter's dullness, the statistical situation is not calculated to give much comfort to those who are waiting for lower prices. Nevertheless, in times like these it is impossible to express any very decided views on either side of the market, as there are so many contingencies any one of which may develop unexpectedly and upset the most careful calculations. It may be presumed that it is this view of the situation that prevents the usual activity, but with the enormous consumption which is still in progress, the absence of new business is less important than it would be under other circumstances. So long as consumption continues the date at which material is to be purchased is a matter of secondary importance. The extraordinary purchases which were made during 1899, and which covered deliveries during a large portion of 1900, sufficiently explains the present dullness, but all the same it would be a grateful stimulus to the market to find a similar feeling as regards the last half of 1900, but business of that kind is not in evidence at the present time. Such orders as are taken, however, are mostly for quick delivery, showing that not only the furnace banks, but buyers' yards are not burdened with much stock. As regards prices it may be said that they are easy, not distinctly lower, but verging in that direction when desirable orders come in sight. This condition is likely to continue until there is a stronger demand, but how soon that will be, time alone can determine. As a rule seaboard prices are about as follows, with relatively lower prices at points within a radius of 100 miles west or south: No. 1 X Foundry, \$25 to \$25.50; No. 2 X Foundry, \$23 to \$24; No. 2 Plain, \$22.25 to \$22.75; Standard Mill Iron, \$20.25 to \$20.75; Basic, \$22.25 to \$22.50; Bessemer, nominal, \$22.50 to \$23; Low Phosphorus, \$27 to \$28, and Charcoal Iron, \$28 to \$30.

Muck Bars.—There is a somewhat better demand, but prices are too low to permit of much margin to the manufacturer. Sales have been made at about \$30 at mill, sellers usually asking 25c. to 50c. more, but it is hard to get business at over \$30.

Billets.—The market is very dull, and although prices are nominally \$37 to \$37.50, buyers manage to secure enough steel to go on with at about \$1 less money.

Plates.—There is a considerable amount of business in prospect, and a very fair tonnage is being taken day by day, but mostly in unimportant quantities. Bridge work is likely to call for a good deal of material in the near future. Competition is very strong, however, and

prices are a little uncertain, although it must be a very desirable order than can be placed at less than 2.30c. to 2.35c. The usual asking prices for seaboard or equivalent points are about as follows: Steel Plates, ¼-inch and thicker, 2.35c. to 2.40c.; Shell, 2.45c. to 2.50c.; Flange, 2.70c. to 2.80c.; Fire Box, 3.10c. to 3.15c.; Charcoal Iron Plates, C. H. No. 1, 3c.; Best Flange, 3.50c.; Fire Box, 4c.

Structural Material.—There is a very good demand and prospects in this line are excellent. All the mills appear to have as much work as they can handle, and as there is every reason to believe that the demand will increase as the spring advances, prices are naturally well maintained. Nearby deliveries are quoted as follows: Beams and Channels, 15 inches and under, 2.40c.; Angles, 3 to 6 inches, 2.40c.; Zee Bars, 2.40c., f.o.b. Philadelphia; Angle Bulbs and Deck Beams, 2.63c.; Tees, 2.45c.

Bars.—The demand is pretty well in line with the supply, and at about the same figures as ruling for some weeks past mills can be kept very full of work. There are quotations and quotations, however, and although 2.20c. at mill is supposed to be the price for best refined iron, buyers claim that they can get satisfactory iron at less money. Prices are about as follows for Philadelphia or nearby deliveries: Ordinary iron, 2.07½c. to 2.10c.; Refined iron, 2.20c.; Test iron, 2.30c.; Steel Bars, 2.50c. to 2.60c.

Sheets.—The situation is much the same as last week. There is a good deal of inquiry, and a heavy tonnage is likely to be on the market soon, but in the meanwhile it is difficult to agree on prices. Last week's quotations are continued for best sheets—viz. (Common sheets two-tenths less): No. 10, 2.70c. to 2.80c.; No. 14, 2.95c.; No. 16, 3c.; Nos. 18-20, 3.05c.; Nos. 21-24, 3.15c.; Nos. 26, 27, 3.25c.; No. 28, 3.35c. to 3.45c.

Old Material.—The market is easy. Material is wanted, but there is no general urgency, so that if prices are not made to suit, business is held up. There is less demand for steel, however, and prices are easier, bids and offers for deliveries in buyers' yards being about as follows: Choice Railroad Scrap, \$23 to \$25; No. 1 Yard Scrap, \$19 to \$20; No. 2 Light Scrap, \$13 to \$14; Machinery Cast, \$17.50 to \$18.25; Heavy Steel Scrap, \$21 to \$22; Old Iron Rails, \$26 to \$28; Old Steel Rails, \$22 to \$23; Wrought Turnings, \$15 to \$15.50; Cast Borings, \$13.50 to \$14; Old Car Wheels, \$22 to \$23; Iron Axles, \$26 to \$28; Steel Axles, \$27 to \$29.

The Tidewater Steel Company have removed their Philadelphia office from the Crozier Building to the Land Title Building, corner Broad and Chestnut streets. The three corners are becoming the center of the iron and steel interests, and are exceedingly convenient both for the city and out of town trade.

St. Louis. (By Telegraph.)

Office of The Iron Age, 1205 Chemical Building, }
St. Louis, February 14, 1900. }

Pig Iron.—No decided change in the situation. Small purchases are constantly made, and this week brought a fair amount of 200-ton orders. So long as large buyers remain out of the market no excitement is anticipated. Coke is in good demand, and judging from the amount being handled foundries are melting iron up to full capacity. The comparatively light movement of pig iron is attributed to consumers' convictions that top figures have been reached. Nothing remains to encourage speculation, and purchases will likely follow the demand for finished products, as is usual on even markets. Furnaces have large quantities of iron sold, and in view of coal scarcity and higher cost of labor and coke they see no condition which will bring about recessions in price. Occasional rumors are heard of standard brands being offered at shade under market, which proved to be in one particular instance a small lot in transit, but more than the consumer cared to unload himself; the concession being 25c. under market and 2.15c. above old contract cost. We quote on cars St. Louis:

Southern, No. 1 Foundry.....	\$22.25 to \$22.50
Southern, No. 2 Foundry.....	21.25 to 21.50
Southern, No. 3 Foundry.....	20.25 to 20.50
No. 1 Soft.....	22.25 to 22.50
No. 2 Soft.....	21.25 to 21.50
Gray Forge.....	20.00 to 20.25

Bars.—Inquiry is freer and wants are for early delivery. Jobbers are not making extensive purchases, but nevertheless their tonnage sales figure up handsomely. Numerous orders, each for moderate amounts, are coming in, clearly showing that the smaller shops in this territory are actively engaged. Some outside mills have advanced prices to that quoted by the principal interest. Mill quotations on iron remain at 2.35c., base, half extras, East St. Louis, in carload lots. No change has

taken place in jobbers' prices, which are 2.75c. to 2.90c., base, full extras, as to quantities and assortment. Steel Bars are now definitely quoted by mills at 2.40c., base, half extras, in carload lots, East St. Louis. Jobbers' price is 3c., full extras.

Rails and Track Supplies.—New demand for supplies is moderate, but requests for more prompt shipments on past contracts are freely made. We quote: Splice Bars, Steel, 2.55c.; Iron, 2.55c.; Track Bolts, with Square Nuts, are now 3.65c.; with Hexagon Nuts, 3.85c.; Spikes, 2.75c.; Steel Links and Pins, 3.20c.

Pig Lead.—The market is rather quiet. Chemical Lead is selling in a limited way at 4.62½c. The demand is said to be good at that figure, but refiners are not disposed to let much go. Soft Missouri and Common is freely sold at 4.60c., although some say it is shaded to 4.57½c. Lead Ore remained unchanged at \$27.75 per 1000 lbs.

Spelter.—The week developed a slight weakness. Ten cars are reported as sold at 4.60c., but smelters' later quotations at even figures failed to bring out orders. It would seem that buyers view the market as under 4.60c., but no sales are reported to establish lower price. Top grade Zinc Ore remained at \$34.50 per ton, and prices paid for lower assay were slightly better than last week.

Birmingham.

BIRMINGHAM, ALA., February 12, 1900.

Inquiry for Iron the past week continued to be very fair, but the completed transactions were not equal to those of the preceding week. There was more irregularity, too, in prices. Some of the Furnace interests hold out very firmly against any concessions. Some have yielded to the pressure and have allowed buyers a commission from 20c. to 35c. per ton. The evidence points very strongly to a direct concession of 50c. per ton in one case, where the seller placed all he desired without difficulty. In each case the seller had an object and the cut price was not open to all comers. It is charged very positively that No. 2 Foundry Iron was sold on the basis of \$17, Birmingham, and No. 3 Foundry on the basis of \$16. Part of it looks as if it was a case of concession to introduce brands not thoroughly established on the market. "Howe'er it be," the transactions have only excited comment and are so far without influence, although strong efforts have been made to compel concessions by their use. Under the circumstances the market is still quoted on the basis of \$17.50 for No. 2 Foundry, with sales in special cases down to \$17. The indications are that we are on the eve of a buying movement and sellers, as a rule, have every faith in at least the maintenance of prices. Local buyers, who have been holding off in expectation of a slump, have lately thrown up the sponge and entered the market and supplied their wants for several months ahead at current market values. Export inquiries continue, but the completed transactions are insignificant in both number and volume. More or less ocean room continues to be taken, but almost all of it is to even up old business of several months' standing.

The Sloss Iron & Steel Company announce that in the Philadelphia and Pittsburgh territory J. K. Dimmick of Philadelphia is now sales agent, and for the Ohio territory Stevenson, Field & Co. of Columbus, Ohio, are the selling agents.

Rogers, Brown & Co. have added Coal and Coke to the business of their office here. Speaking of these, New England was in the market the past week with heavy inquiries for both Coal and Coke. The situation is such that nothing could be done for them. Then the large smelting works in California had a direct representative here to purchase for spot shipment and to contract for future delivery large amounts of Coke. He succeeded in getting only a very moderate amount for nearby delivery at \$4 per ton. "It never rains but it pours." On top of these home inquiries came urgent demands from Mexico and the Continent of Europe for both Coal and Coke that could not be favorably entertained. These demands from such sources accentuate the great scarcity and they point to the great possibilities that the future has in store for this district in this line. With the development of the Warrior Coal fields, which will follow the extension of the railroads through them, we will, in time, increase our production of Coal and Coke to a point that will place that interest on a parity with Iron in point of importance. There are some new developments in the way of industrial enterprises.

Two large concerns making Finished Steel products have been quietly investigating the advantages of this locality and have finally decided to locate here. They will determine upon sites this week. They have covered their movements with all the secrecy possible and will

not as yet make any announcement. One will invest \$300,000 in their plant and the other over \$500,000. These will influence others. This continued increase of industries must affect our sales of the crude Iron to outsiders. The only way to retain our prestige as makers of prices of Iron will be to increase our furnace capacity. That is bound to follow. The tremendous strides in the increase of industrial development in the past two years is not only a matter of comment, but as "like begets like," is an inducement for others to accept the opportunity to be at the primal source of supply, the point of cheapest production. The L. & N. R. R., always foremost in development, is putting in now ten spur tracks of varying lengths to new mines being opened. All over the district improvement is steadily going on and the continuous demand for mining machinery indicates the activity in that interest.

New York.

Office of *The Iron Age*, 232-238 William street, }
New York, February 14, 1900. }

Pig Iron.—Very little business has been done in this district recently and the market is very quiet, with buyers and sellers pretty far apart. There are reports of some large transactions for export. Prices are as follows: Lehigh and Schuylkill Irons, No. 1 Foundry, \$24 to \$25; No. 2 X, \$22.50 to \$22.75; No. 2 Plain, \$21.50 to \$22, and Gray Forge, \$18.50 to \$19.25. Southern brands are quoted: No. 1 Foundry, \$22.75 to \$23; No. 2 Foundry, \$21.50 to \$22; No. 1 Soft, \$22.25 to \$22.75; No. 2 Soft, \$21.25 to \$21.75; No. 3 Foundry, \$21.25 to \$21.75, and Gray Forge, \$19.25 to \$20.25.

Cast Iron Pipe.—One good sized order has been placed during the past week, and there is quite a run of inquiries of moderate size. We continue to quote \$29.50 to \$30 per ton for 8-inch Pipe, tidewater.

Steel Rails.—The outside Rails which have been offered in this market have not yet found takers. Angle Bars are quoted 2.35c. to 2.40c., and Spikes, 2.65c. to 2.75c., delivered.

Finished Iron and Steel.—A leading Eastern mill reports sales aggregating about 5000 tons, which includes one season's contract of about 3000 tons. Among the larger contracts which are expected to come out soon is that for the new Printing Office in Washington, which will call for 5000 to 6000 tons. We quote: Beams, 2.40c. to 2.50c.; Angles, 2.40c. to 2.45c.; Universal Mill Plates, 2.65c. to 2.75c.; Tees, 2.40c. to 2.45c.; Channels, 2.40c. to 2.50c.; Steel Plates are 2.40c. to 2.60c. for Tank, 2.50c. to 2.75c. for Shell, 2.75c. to 2.90c. for Flange, 3.10c. to 3.30c. for Fire Box, 3.75c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are 3c. for C. H. No. 1, 3.50c. for Flange, and 4c. for Fire Box. Refined Bars are 2.20c. to 2.25c., and Common Bars are 2c. to 2.10c., on dock. Soft Steel Bars, 2.40c. to 2.45c.; Hoops, 2.70c. to 2.75c., base, delivered.

Merchant Pipe.—Quotations on Merchant Pipe in carloads are 50, 10 and 10 per cent. discount, delivered, and in less than carloads 50 and 10 per cent., f.o.b. maker's mill. On Casing the figures are: For carload lots, S. and S. Joint, 37½ per cent.; Inserted Joint, 32½ per cent.; for less than carload lots, S. and S. Joint, 32½ per cent., and for Inserted Joint, 27½ per cent., less 5 per cent. to jobbers, the prices for carload lots being delivered and for less than carload lots f.o.b. mill. On Boiler Tubes, 1¼ to 2½ inch, the prices are 55 per cent. off on Steel and 50 per cent. on Iron; for Boiler Tubes, 2¾-inch and larger, 55 per cent. on Steel and 52½ per cent. on Iron, all subject to 5 per cent. on car lots, the prices for carload lots being delivered and on less than carload lots f.o.b. mill.

Metal Market.

Office of *The Iron Age*, 232-238 William street, }
New York, February 14, 1900. }

Pig Tin.—London continues in its dictatorial course. Following the leadership of London this market has advanced considerably, closing to-day at 30.10c. to 30½c. for spot. Purchasing is not active, however, and consumers are buying only as necessitated by actual requirements. This cautiousness is laid to the heavy discount on futures, which is by no means conducive of confidence. The London market is still soaring, having climbed just £4½ since the last writing on spot. Closing cables to-day name £137 for spot and £132 15s. for futures.

Copper.—This market is quiet. The prices of Lake Superior Ingot, as well as Electrolytic and Casting Copper, remain unchanged according to the figures of the Metal Exchange. These prices are: Lake, 16¼c.; Elec-

trolytic and Casting, 16½c. In every quarter of the trade save one exception these prices are also quoted. The single house referred to quote 16c. for Lake and 15½c. to ¾c. for Electrolytic and Casting. We are reliably informed that Electrolytic and Casting can be procured at a discount from the "official" figures. The London market closed to-day £74 15s. for spot and £73 for three months' futures. Best Selected has advanced 15 shillings and is quoted to-day £77. We are now informed on excellent authority that the sale of the Calumet & Hecla Company, which, according to certain authorities was made weeks ago, has actually been consummated. The deal, however, was closed as recent as last Friday. It is stated that between 15,000,000 and 20,000,000 pounds were disposed of to the buying pool. The price is said to be 16c. In this connection it is also said that the deal involved numerous "conditions."

Pig Lead.—There is absolutely no change in the position of the market or in prices here. Prices of the American Smelting & Refining Company are still 4.70c. to 4.75c. for spot and futures. This is also the regular quotation given in the trade. London has advanced a shade and is quoted at the close to-day £16 12s. 6d.

Spelter.—The market is quiet and easier. The business going through here is almost nil. Prices are lower. The metal is offered at 4.70c., but the best bid obtainable is 4.60c. It is said that a considerable quantity is being shipped abroad. A report coming from a good source has it that between 800 and 1000 tons have been exported during the week. We are informed that one party shipped about 500 tons to England within the last week. The price was on a parity with 4.70c. to 4.75c., Kansas points. There has been a slight falling off in values in London. To-day's closing cables name £22 10d. for spot.

Antimony—Is without change. Hallett's is selling at 3¾c. and Cookson's 10½c. to 11c.

Nickel—Is still firm and scarce. The demand is said to continue excellently and prices for wholesale lots remain unchanged at 38c. Retail lots are quoted as high as 45c.

Quicksilver.—Wholesale lots of 100 flasks and over are quoted \$51 per flask of 76½ lbs. The London market remains unchanged at £9 12s. 6d. for Rothschild's and £9 11s. 3d. for second hand.

Tin Plate.—There is no change in the situation. The demand continues fairly active and the American Tin Plate Company still quote on a basis of \$4.84 per box of standard 100-lb. Cokes, f.o.b. New York, or \$4.65, f.o.b. mill.

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, }
NEW YORK, February 14, 1900. }

In almost all quarters it is reported that during the week under review a remarkable state of quietude has been maintained. This lull is especially noticeable because of the extremely bright indications of a fortnight ago. Then inquiries and everything pointed toward an excellent month of February and a cheerful optimism prevailed. Now it is said that the correspondence lacks life and that purchases show a disposition to hold off and await developments in the material markets. Orders are not nearly as numerous as they were two weeks ago, and really the only business which is going through at the moment is for the smaller classes of materials. Projectors of large undertakings are holding off, displaying much shyness. In the machine tool market the builders of the heavier types are still far behind and no anxiety is shown over the present situation. With little tools this is not the case. The smaller sizes of machine tools are being turned out in large volume. The stocks of the merchants and builders are fast becoming replenished and now certain parties express fears that the accumulation is becoming too great. The building of small lathes and similar lines does not require a very great equipment of machinery or much time. Naturally during the height of the activity of a few months ago the production of these classes of machinery was increased considerably. Now that the rush has subsided somewhat the increased production is beginning to tell. We are unable, however, to hear of any weakness in prices. In fact, we have heard of but one change of importance. That was a 5 per cent. advance. It was made by an engine builder.

It is quite evident that the trade are treating the large number of new automobile companies rather cautiously. This precaution has doubtlessly been brought about by bitter experience of but a short time ago when machinery merchants displayed a reckless eagerness to equip the bicycle plants in their mushroomlike growth. A number of good sized concerns were bitten severely dur-

ing the bicycle craze, and although the automobile industry can scarcely be compared at present with the bicycle boom, it is said that earmarks are visible showing a resemblance to some of the self same manipulators who were among the promoters of mushroom bicycle concerns. The number of large equipments which have been purchased thus far for the building of automobiles is actually very slight. Although most of the recent companies are coupled with capitalization showing five ciphers after the figure, their actual operations are largely confined to experimental stages. Building a successful automobile is not as simple a matter as it was to build a bicycle.

Proposals blanks have just been issued by the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., for a list of pattern shop and blacksmiths' tools, to be installed at the New York Navy Yard, Brooklyn, N. Y. The proposals will be opened at noon on March 6, 1900. The list includes: One iron frame "Daniels," or traverse planing machine, to plane 20 feet long, 24 inches wide and 20 inches high. One self feeding rip saw on heavy iron tables at least 78 inches long and 36 inches wide, with a section 26 x 10½ inches over the saw arbor. One band scroll and resawing machine, with wheels 48 inches in diameter and 3 inches wide, and table 48½ x 42 inches. One band sawing machine, with wheels 36 inches in diameter and receiving blades 1¼ inches wide, and table 34 x 28 inches. One No. 3 tenoning machine, with two tenoning heads and two cope heads. One universal wood worker, with a molder side to work four sides 8 inches wide and a wood worker side to work 10½ inches wide. One rod and pin dowel machine, with three pairs of feed rolls, one pair of which is to be at right angles to the others. One large column face lathe, made to turn up to 7 feet in diameter, with three face plates of 12, 20 and 30 inches in diameter respectively. One automatic dovetailing machine, to work material up to 24 inches wide and from ½ to 1½ inches thick. Two improved variety sawing machines for 14-inch diameter saw, and iron table about 36 x 48 inches. One heavy double cylinder surfacing planer, to plane 30 inches wide and 6 inches thick. One panel carving machine and freezer edge molder to have iron table about 30 x 34 inches, and vertical movement of spindle to be at least 2¼ inches. One 2¼-ton upright steam hammer, to have cylinder 20½ inches in diameter and 3 feet 6 inches stroke. One 800-pound double frame steam drop hammer, to have stroke of 30 inches and a piston of 6 inches in diameter. One No. 74½ geared press, with Bliss positive clutch, to have fly wheel 45 inches in diameter and 6 inches face. Stroke up to 4 inches and adjustment of plunger 4 inches. One 2-inch bolt heading and forging machine, capable of forging bolts from ½ to 2 inches in diameter. One No. 2 power shear, to cut round iron up to 1½ inches in diameter, and flat iron up to ¾ x 3 inches. One 12 inches diameter by 12 foot by 3 inch bending roll, to be of pyramid type.

Class 19 comprises 120 items of carpenters' and wood workers' hand and edge tools.

Col. Alexander Gordon, chairman of the Board of Directors of the Miles-Bement-Pond Company, who spends most of his time abroad, will sail again for Europe next Tuesday. His latest stay in this country extended over only a few weeks. In speaking of the conditions abroad Colonel Gordon said: "The tone of the European market is wonderfully strong. There are no indications of an abatement, and in structural steel and heavy machinery business there is even much better than it is here. They are not as spasmodic in Europe as we are here. When they get a good run of heavy business they keep at and continue the good work, unmindful of the little things that seem to set our people here thinking that the rush is all over. They are much steadier and maintain a better feeling and firmer tone. They are not so easily upset. It took them quite a while to get used to importing immense quantities of American iron, steel and machinery, but now that they are accustomed to it and see that it is working advantageously for them they make the best of it. I remember a short time ago a German merchant of prominence told me that if we Americans continued we would have Berlin paved a foot deep in steel plates. But now he sees the great favor with which our goods have met and is as eager as any one to hasten deliveries on work which he has ordered.

"The Russians have ordered great quantities of it, going through Germany first. Many concerns have rushed into Russia to do great things, and after they got settled realized to their sorrow where they really were. The Russians are a slow people; slow in arriving at a conclusion when they want to buy and slow in paying after they have purchased. It is a land of long credit. When a man there wants to place a good order he likes to have a representative call on him and spend a lot of time before he thinks of talking business. The iron and steel plants which they have constructed there have not proved the success which was anticipated.

"Sweden is a grand little country. They are progress-

ing very rapidly, too, and I look for much good business from that section. The Government is doing much in the way of improving its railways. Belgium is a very busy little place, but they are too much hampered by trades unions and internal strife. This difficulty is also largely encountered in Italy. Why, one of the greatest and most progressive Italian merchants was recently killed by one of his employees. One of the greatest detriments throughout Europe is the Governmental control of railroads and large mechanical institutions. Instead of spending the earnings of the railroads, for instance, in improving the roads they appropriate the money for other political purposes. They are not nearly as progressive as the private firms.

"Owing to the protracted deliveries on structural steel and the lack of workmen we have not been able to put the German Niles works in operation as soon as we expected. It will now probably be at least 60 days before the works will be finished. One time just before I left Berlin there were wanted something like 3000 bricklayers, to work on buildings which were in course of construction. There is no reason to fear a letting up of European business, as they are far overtaxed now."

The Prindle Engineering Company, who have just been formed, are to succeed the Prindle Pump Company of 120 Liberty street. The new company will conduct the business of the old and will in addition operate the plant of the Camden Iron Works of Camden, N. J. The company will build all types of large pumping machinery. The officers of the new concern are: Roscoe S. Prindle, president; William F. Hall, vice-president, and Walter Wood of Philadelphia, treasurer. The company have just been awarded the contract for a sewage pumping plant for Atlantic City, N. J.

The Ruggles Coles Engineering Company of 39 and 41 Cortlandt street have been awarded the contract for all of the conveying machinery in connection with the Whitehall Portland Cement Company of Cementon, Pa.

Woolston & Brew, New York representatives for the Fisher Engine Company, of Fitchburg, Mass., and the Brown Engine Company of Pittsburgh, Pa., whose offices are at 141 Broadway, have been awarded a contract by the International Paper Company for five 250 horse-power engines. The engines will be installed in the new paper mills which are being built at Corinth, N. Y. They will be run 24 hours per day at 180 revolutions per minute. Woolston & Brew also received an order for a 400 horse-power Brown engine from the Montello Brick Company of Reading, Pa.

The American Blower Company of Detroit, Mich., and 141 Broadway, New York, received the contract for the induced draft apparatus to be installed at the new power plant which the Curtis Publishing Company of Philadelphia, Pa., are purchasing. The plant will be of 1000 horse-power.

The Merritt-Chapman Derrick & Wrecking Company have ordered from the Lambert Hoisting Engine Company of 85 Liberty street and Newark, N. J., a special 50-ton hoisting engine. There will be six friction drums to the engine and the cylinders will be 15 x 16 inches. The engine is to be erected on a wrecking lighter.

Based on information received from Europe the Newark Machine Tool Works of Newark, N. J., on December 15, 1899, called the attention of the Berlin principal office of Schuchardt & Schuette to the report that the Belgian branch of that firm had offered and sold horizontal boring machines in Belgium, representing that they had been made by the Newark Machine Tool Works. Max Daunert, manager of the New York office of Schuchardt & Schuette, advises us that an investigation has shown that the report in question is not correct in any of the details mentioned.

We understand that the Goulds Mfg. Company of Seneca Falls, N. Y., are now purchasing machinery for equipping the addition which they are building to their plant.

The Robbins Conveying Belt Company of 147 Cedar street, New York, are re-equipping a shop at Passaic, N. J., which they purchased recently, for the manufacture of their conveying apparatus.

United States Consul Dudley, at Vancouver, B. C., reports to the State Department that he has arranged for the display in the Board of Trade rooms in that city of catalogues and price-lists of manufacturers and merchants in the United States.

The scarcity of coal is becoming acute in many parts of Europe and numerous industrial establishments are being forced to suspend operations. The Government of Saxony has monopolized the remainder of the coal supply in that country for operating the State railroads, and the Russian Government has suspended, until September 1 next, the duty on imported coal for the use of the railways in Russia.

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QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING FEBRUARY 14, 1900.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday	Wednesday
\$29,000,000	Am. Car & Foundry, Common..	2,648	16½-17	-16½	-16½	.....	-16½	16 -16½
29,000,000	Am. Car & Fy, Pref. (7½ Non-Cu.)	1,274	-64½	.....	-64½	.....	-63½	-64
19,000,000	Am. Steel Hoop, Common.....	6,575	47 -48½	47 -47½	-46½	.....	47 -4½	47 -47½
14,000,000	Am. Steel Hoop, Pref. (7 ½ Cu.)	2,747	85 -85½	84 -85	84½-85	.....	85	84½-85
50,000,000	Am. S. & W., Common.....	43,185	56½-58	56½-57½	56½-57½	.....	57½-58½	58 -58½
40,000,000	Am. S. & W., Pref. (7 ½ Cu.)...	4,132	93½-94½	93½-93½	93 -93½	.....	93½-94	93½-93½
28,000,000	Am. Tin Plate, Common, N. Y.	3,228	34½-35½	34½-34½	-34½	.....	34 -35	34½-35
18,000,000	Am. Tin Plate, Pref., N. Y. (7½ Cu.)	190	.....	.....	-82½	.....	.....	.....
7,500,000	Bethlehem Iron.....	190	-58	-58	.....	.....	-58	.....
15,000,000	Beth. Steel, Par \$50, \$1 paid in.	485	.....	18½-18½	-18½	.....	18½-18½	-18½
7,974,550	Cambria Iron, Phila.....	30	-44½	.....	.....	.....	-44½	.....
16,000,000	Cambria Steel.....	170	21½-21½	-21½	.....	.....	.....	-21½
11,000,000	Col. Fuel and Iron.....	10,275	45½-47	45½-45½	45 -45½	.....	46 -46½	46½-47½
46,484,300	Federal Steel, Common.....	40,290	55½-56½	55½-56½	54½-55	.....	55½-57	5½-56½
53,258,500	Federal Steel, Pref. (6 ½ Non-Cu.)	8,280	75½-76	.....	75 -75½	.....	75½-76½	75 -76½
32,000,000	National Steel, Common, N. Y.	22,760	49½-50½	49½-50	48½-49½	.....	50 -51½	50 -51½
27,000,000	Nat'l Steel, Pref., N. Y. (7 ½ Cu.)	796	-95	-95	-96	.....	.....	.....
5,000,000	Penna., Common, Phila.....	521	.....	80 -86½	-85	.....	-84½	.....
1,500,000	Penna., Pref., Phila.....	41	.....	-93	.....	.....	.....	.....
12,500,000	Pressed Steel, Common.....	2,450	56½-57	56 -56½	-55½	.....	-56	56 -57½
12,500,000	Pressed Steel, Pref. (7 ½ Non-Cu.)	.....	.....	.....	.....	.....	.....	.....
27,352,000	Republic Iron & Steel, Common.	11,751	24½-26	24½-25	24 -24½	.....	25 -25½	24½-25½
20,852,000	Repub. Iron & Steel, Pref. (7½ Cu.)	740	68½-69	-68½	.....	.....	68½	6½
20,000,000	Tennessee Coal and Iron.....	21,383	96 -100	95½-96½	95½-96½	.....	96½-99½	99 -102
1,500,000	Warwick Iron & Steel (par \$10)	15	.....	.....	.....	.....	-10	-9½

* Par \$50. ** \$1.50 per share paid in. † 6 ½ guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

Bonded indebtedness: Am. S. & W., \$19,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., \$2,000,000 6 ½ debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., \$13,200,000 Illinois 5 ½ \$7,117,000 E. J. E. R. R. 5 ½ \$1,800,000 Johnson 6 ½ \$6,732,000 D. & I. R. R. 5 ½ \$1,000,000 2d D. & I. R. R. 6 ½ \$10,000 land grant D. & I. R. R. 5 ½; National Steel, \$2,561,000 6 ½; Tennessee C., I. & R. R. Co., \$3,367,000 6 ½; \$1,114,000 7 ½; \$1,000,000 7 ½ cu pref; Pennsylvania Steel, \$1,600,000 6 ½; Steelton Ist 1917, \$2,000,000 5 ½ Sparrow's Point Ist 1922, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000 5 ½ maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none. Colorado Fuel & Iron Co.: Col. Fuel Co. Gen. Mort. 6 ½ \$380,000, Col. Coal & Iron Gen. Mort. 6 ½ \$2,810,000, Col. Fuel & Iron Gen. Mort. 5 ½ \$2,000,000. Also outstanding \$2,000,000 preferred stock with accumulated dividends of \$640,000 to June 30, 1899.

Iron and Industrial Stocks.

The past week has not been an active one, but values have been steady. At one time there was considerable profit taking, which caused some irregularity. Federal common advanced sharply on the declaration of the dividend, while Tennessee had its rise to-day on reports that the declaration of a dividend on the common at the rate of 8 per cent. per annum is imminent.

Among the unlisted securities National Tube has displayed considerable activity and strength.

	Bid.	Asked.
American Bicycle Company, common.....	14	17
American Bicycle Company, preferred.....	45	51
American Bicycle Company, bonds.....	.....	92½
E. W. Bliss, common.....	132	150
E. W. Bliss, preferred.....	125	.....
Cramp's Shipyard stock.....	76	80
Diamond State Steel.....	5¼	5½
International Silver, common.....	9	10
International Pump, common.....	18	19
International Pump, preferred.....	65	66
National Tube, common.....	50	50½
National Tube, preferred.....	92½	93
Otis Elevator, common.....	24	25½
Otis Elevator, preferred.....	87	89
Pratt & Whitney, common.....	3½	5
Pratt & Whitney, preferred.....	46	54
U. S. Projectile.....	95	105
Sloss & Sheffield Steel & Iron, common.....	30	32
Sloss & Sheffield Steel & Iron, preferred.....	71	73
Tidewater Steel.....	16	16½
U. S. Cast Iron Pipe Company, common.....	8	8½
U. S. Cast Iron Pipe Company, preferred.....	45	46
H. R. Worthington, preferred.....	101	.....

The American Ordnance Company's annual report for the year ending December 31, 1899, shows:

Unfinished business January 1, 1899.....	\$687,394
Orders received during year.....	606,830
Total.....	\$1,294,224
Deliveries during year.....	979,011

Unfinished business January 1, 1900..... \$315,213

The balance sheet of December 31, 1899, shows:

Gross gain.....	\$248,210
Expenses.....	133,743
Net gain.....	\$114,466

Expenses were reduced from \$163,187 to \$133,743; net saving \$29,443.

The 2280 shares of preferred stock and 5928 shares common stock offered for sale December 1 were reported sold. The board of directors decided to carry the year's profits of \$114,466 to working capital account instead of declaring dividends, thereby reducing interest charges. At the annual meeting the following directors were elected: L. V. Benet, Heber R. Bishop, N. W. Bishop, W. J. Bruff, Henry W. Cramp, T. C. Favarger, Chas. R. Flint, Marcellus Hartley, Robert P. Linderman, John E. Searles, H. N. Sweet, Edward W. Very, J. Howard Ford, Frederick Stewart, E. B. Freeman.

The Niles-Bement-Pond Company, organized last August, have met in Jersey City and re-elected the board of directors. At a subsequent meeting of the board the regular quarterly dividend of 1½ per cent. on the pre-

ferred stock was declared, payable February 20. Transfer books reopen February 21.

At a meeting of the directors of Federal Steel a dividend of 2½ per cent. on the common stock, payable out of the earnings of 1899, was declared. This completes the dividends for last year, payment of which was enjoined by the courts until the full year's dividend on the preferred had been paid. Next month another meeting of the directors will be held, when it is expected that action on this year's dividend will be taken and the company's policy for the year outlined.

At the conclusion of the meeting it was said that for the information of the directors President Gary had made a statement of the net earnings of the Federal Steel Company and their constituent companies as follows:

Net earnings of the Federal Steel Company and constituent companies for the calendar year 1899.....	\$10,592,843.31
Loss charged for new construction, improvements, renewals and replacements.....	\$1,234,045.32
For reserve funds, depreciation.....	901,137.05
For premium on bonds purchased.....	153,995.04
Total.....	2,289,178.41
Add net profits accrued during 1898, subsequent to the time the Federal Steel Company acquired ownership of stock of constituent companies..	1,215,679.80
Total net profits to December 31, 1899.....	\$9,519,344.70
Dividends for 1899 on Federal Steel Company stock: Preferred, 6 per cent.; common, 1½ per cent., paid January 20, 1900; common, 2½ per cent., payable March 20, 1900.....	4,938,702.75
Surplus.....	\$4,580,641.95

The American Steel Sheet Company.—The consolidation of the sheet mills in the Central West is coming to a head. With the exception of the Apollo Iron & Steel Company of Vandergrift, the Whitaker Iron Company of Wheeling, W. Va., and W. Dewees Wood of McKeesport, Pa., the sheet mills are to consolidate. The company, who are to be closely allied with the National Steel Company, will have a capital stock of \$52,000,000 equally divided between 7 per cent. cumulative preferred stock and common. Of the preferred stock \$10,000,000, and the entire common stock will be placed in the treasury.

The Anglo-Boer war has caused a practical suspension of the diamond cutting industry. The supply of diamonds from the Kimberley district having been cut off, thousands of workmen in Antwerp and Amsterdam and hundreds in New York are thrown out of employment.

A fire that has been raging in the Lehigh Coal & Navigation Company's colliery, at Lansford, Pa., for 32 years has at last been extinguished, and the colliery will be pumped out with the view of resuming operations.

The Next Sixty Days in the Iron Trade.

BY WILLARD S. MATTOX, BOSTON, MASS.

The iron trade is getting to be as familiar with the phrase, "There is no change in the situation," as the British public is with Lord Roberts' daily telegram. "This is a waiting market," said a prominent local consumer in explaining why he did not buy though he was nearing the end of his supplies. The month of January, always a lifeless one for both sellers and manufacturers of pig iron, has been particularly trying to the nerves, and the next 60 days are likely to tell the fate of the iron market for the year. The conditions existing now, as summed up in the reports from all over the country, are about these. Since the first of the year there has been little buying. Inquiries develop the fact that this is due to two causes: 1. Many concerns are apathetic, because they have contracted for their supply of iron for six to nine months to come. These, therefore, are not worried about the immediate effects on prices. 2. There is a large element whose contracts are about expiring or will run out in a month or two. A part of this class of buyers are placing small orders for immediate delivery in order to keep their plants going; others are waiting till the last week in the uncertain hope that bargain counter prices will soon prevail. The result from both causes is an insignificant tonnage and a dangerous period of uncertainty, which is the greatest threat the iron market has had aimed at it since the beginning of 1899.

The number of sales actually being made is so small and the interest manifested by buyers is so slight that an appearance of weakness is given to the general aspect of trade which is not deserved. There are also remote economic reasons for the suspension of buying, as well as a deep seated conviction on the part of consumers that prices are about to fall. There has been more bearish talk in the past month than during the entire six months preceding. There is no argument in favor of artificially boosting the market, because any such effort would fail ultimately, and more likely in the very beginning. Not only this, but a majority of those interested agree that the present basis of prices is out of proportion, and many would be glad to see a moderate falling off. But even granting these premises, it does not follow that it would be profitable or advantageous to move prices down before the time was ripe, or to send them down too far or too fast.

The actual demand for raw material has certainly not abated. Orders for finished work of all descriptions are being postponed, but must eventually put in an appearance. Foundries cannot stop melting or filling contracts simply because it is hoped or desired that there will be a change. The policy of waiting on the part of consumers, which is evidently for the purpose of forcing the hand of the sellers and producing an unnaturally congested state of trade, is very likely to result in just the opposite condition from that aimed at. Just now the trade is lethargic. But buying must be done sooner or later; demand warrants it, and demand has fixed to day's prices, or nearly so. Thus, then, in the course of a few weeks, it may happen that there will be a sudden and simultaneous rush to cover requirements. Orders for iron will then come in so rapidly that furnaces may feel justified in either advancing prices or refusing to concede a fraction from the prevailing figures. If there is any concerted action to lower the price of pig iron it is liable to defeat itself by the very means it adopts.

On the other hand, it is apparent that none of the selling interests are making an endeavor to unduly influence the natural trend of events. A few instances have already been noted in *The Iron Age* where something less than ruling prices was accepted, but all such cases have been accompanied by peculiar local circumstances, which could not possibly be applied to general conditions nor furnish grounds for comparison. As far as can be learned, neither furnaces nor those who represent them have tried to flood the market with cheap iron, and buyers are being allowed to have their own way. This very shrewdly puts the burden of making the first move, whatever it may be, upon the consumer and leaves the seller free to figure out a checkmate. The situation resolves itself down to this: If the furnaces can hold out with a show of indifference buyers will have to meet them or shut up shop. This latter course is out of the question. The inference, then, is plain. If, however, consumers, or the bulk of them, can wait long enough the balance will be upset and prices will have to deteriorate. Just how much is a question. And just what limit would satisfy the buying contingent is a problem even they do not now attempt to solve. Any great anxiety to dispose of iron would be a signal for a general retreat. It is not to be supposed, though, that the furnaces will be disconcerted by 30 or 60 days' inactivity. A slight increase of stocks would not be enough to justify a weakened front. What-

ever is now accumulating or may accumulate could easily be moved when the normal demand sets in again. It must be remembered, too, that an outlet may be offered for any possible surplus of Alabama iron before very long through the English and Continental demand, which gives signs of resuming some of the proportions of a year ago, before there was such a disparity in prices between American and foreign markets. If this should develop largely it would be a very strong feature in helping the home markets to maintain their present status.

There is a little pleasant fiction indulged in by both sides. It is often stated that furnaces have sold their output for the balance of the year, yet iron is always available in plenty. Customers, too, indulge themselves and selling agents in the polite deception that they are covered for months to come. If the truth were extracted from both statements it would be found that things were nearly evenly adjusted. It is reasonable to believe that as the time approaches for the larger buyers to place contracts they would attempt to demoralize the market, and there are evidences of such tactics. So far they have failed, and have been met by a determined opposition from the furnaces. If the market falls it must be and ought sensibly to be because of plausible and natural causes and not from speculative machinations. Summing up the question it would seem that the next two months will test the strength of the iron and steel trades and develop whatever weakness there is. If the trade survives it may be taken that the country will then accommodate itself to a long and contented period of activity, happily undisturbed by unsettling features. The next two months will probably be long enough to prove whether it is wise to try to create conditions which are not in harmony with the laws of supply and demand, and long enough to demonstrate the relative sticking powers of buyers and sellers. There is no reason to amend the views expressed at the close of the year, that 1900 will be as prosperous throughout as its predecessor.

Trade Publications.

Machine Tools.—A large and handsomely illustrated catalogue has been prepared by the Hilles & Jones Company of Wilmington, Del., descriptive of the wide lines of standard machines built by them. The several descriptions are brief, the main dependence being placed upon the unusually excellent engravings. Their standard punching and shearing machines are convenient and easy of operation, self contained, heavy, well proportioned and of ample strength for their rated capacities. The bearing surfaces are large and the caps for the driving shaft bearings are at an angle permitting the removal of the shaft without disturbing the gearing. The sliding heads or plungers are counterbalanced. On large sizes the counterbalance weight is connected through a patented spiral spring which takes the shock of the punching. The punching and shearing attachments are held in place by through bolts, allowing an unlimited number of changes without damage to the main frame of the machine. When desired adjustable automatic stops are furnished. These are very desirable for certain classes of punching, as the punch may be brought to rest after each stroke immediately above the plate, and the point of stoppage may be readily adjusted. These machines are made both single and double and in a great variety of patterns. Section 2 deals with vertical punching and shearing machinery, single and double, designed for special purposes. Their rapid action punches are so called for the reason that they are operated at a speed of about 75 strokes per minute. They are provided with an automatic clutch for starting and stopping the sliding ahead, operated by a foot lever. This device brings the punch entirely under control, notwithstanding the high speed. Horizontal punching machinery has been designed with especial reference to the requirements of boiler makers, locomotive, ship, bridge and car builders. Their universal shears, when supplied with the necessary attachments, will trim and split wide plates, cut off flat bars, round bars and angle bars, and also bevel the edge of plates for calking. Various types of guillotine shears for bar and boiler work are illustrated. Their double angle shearing machines all have right and left hand plates, and the shape of the main frame casting makes it possible to shear at an angle of 45 degrees either right or left, as well as straight shearing. These plates are reversible, so that four cutting edges are obtained. Next follow descriptions of plate shearing machinery, multiple punches, plate planers, plate bending rolls and straightening rolls. A second catalogue by the same company describes their I beam cutting machines, gate shears, combined shear and bender, flange punches and riveting machines.

Sugar Cane Machinery.—A late catalogue of the Link-Belt Engineering Company of Philadelphia is entitled "Modern Methods Applied to the Handling of

Sugar Cane and Its Products. It considers link belt elevators, bagasse conductors and feeders, conveyors, chains, sprocket wheels, &c. The link belt elevators for handling sugar are in general use in all sugar producing countries, as they are not affected by heat or moisture, which proves so destructive to leather and rubber belt elevators. They do not slip nor clog, and have the greatest durability and can be thoroughly cleansed by being washed down with a hose during cleaning up periods. This elevator can also be driven from the bottom, which in many cases is a great advantage. The style C malleable iron bucket was designed for handling sugar, and after several years' service it has proved to give much better discharge than any other form of bucket used for handling this sticky material.

Sioux Corliss Engines and Boilers.—A catalogue of the Murray Iron Works Company of Burlington, Iowa, describes very fully their Sioux Corliss engines and boilers. These engines are noted for the excellence of the material entering into their construction and the workmanship employed in their manufacture, the rigid system of inspection followed and the superiority in the general design. The catalogue gives the principal features of the engine and contains many excellent half tone and line engravings.

Gauges and Reamers.—A catalogue of the John M. Rogers Boat, Gauge & Drill Works of Gloucester City, N. J., describes their measuring instruments of precision; also their adjustable plate shell and rose chucking reamers. Their standard measuring machine is designed for use in the tool room in preparing templates, reamers, mandrels, &c. It will measure differences of 1-10,000 inch. Adjustments in the machine provide for wear of the measuring points. Their fixed caliper gauges are carefully hardened to prevent wear, and are made in sizes ranging from $\frac{1}{4}$ inch to 12 inches by sixteenths. The plates of their adjustable reamers are hardened with special care. They are fitted into dovetailed slots, the bottoms of which are inclined planes. By driving the plates on the shank the cutting edges can be extended to compensate for wear. Since the plates are interchangeable they can be removed when worn to the limit of end adjustment, and new ones inserted. Each reamer carries from four to eight blades, evenly spaced.

Electric Engine Stops.—The Springfield Engine Stop Company, Springfield, Mass., have prepared a catalogue descriptive of the Corliss and Columbia electric engine stops, speed limits, vacuum breakers and flexible blocks. The speed limit acts to stop the engine automatically upon an increase or decrease of speed, and the electrically connected buttons that may be placed throughout the factory furnish a multiplicity of points from which life and valuable property may be saved. As soon as the speed of the engine either increases or diminishes to the high or low speed limit, respectively, the engine is stopped. The engine can be stopped quicker by this invention than by the throttle, as it operates directly upon the main valve, thus avoiding the passing of the steam which is between the throttle and main valves through the cylinder, and also gaining in the time it takes to turn the throttle. Numerous testimonials prove the value of the device.

Metallic Rod Packing.—A pamphlet received from the Reeves Machine Company of Trenton, N. J., describes the Harthan metallic rod packing made by them. This packing will successfully pack "any old rod," no matter what its shape or how badly scored, so long as it is parallel; also any new rod, no matter how good it is. It requires only one kind of packing for all conditions and pressures from a vacuum to the highest. It is a strictly metallic packing, being neither a combination of fiber and metal, nor gum and metal.

Spiral Journal Bearings.—A catalogue of the Spiral Journal Bearing Company of St. Louis, Mo., describes several types of their spiral bearings. These bearings consist of an iron shell lined with two dissimilar metals, bronze and antifriction, so placed that the journal has a continuous bearing on both. From this combination of hard and soft metal there is obtained a greater life than is possible from either a solid bronze or babbitted bearing.

An Artistic Sheet Iron Hand Book.—An exceptionally attractive advertising publication has reached us from the W. Dewees Wood Company of McKeesport, Pa., the well-known makers of Wood's patent planished sheet iron and Wood's uniform color smooth black sheets. It is in the form of a 20-page

pamphlet, 7 x 5 inches in size. The work is printed in brown ink on thick glazed paper, and copiously embellished with half tone illustrations, showing views of the company's offices at McKeesport and their immense works in the same town, a drawing of the modest plant as it existed in 1851 suggesting the growth of the business in the 49 years since its foundation. The brown cover is adorned with the company's familiar "eagle and bear" trade-mark. The letterpress gives an interesting history of the origin of Wood's patent planished sheet iron, which was first placed upon the American market in 1870, as a substitute for Russia iron, the process of manufacture being the invention of the late W. Dewees Wood. The success of this product is shown from the fact that 30 years ago the annual importation of Russia sheet iron into this country amounted to about 30,000 packs, while to-day the yearly total does not exceed a few hundred packs.

A description of the method of manufacture of Wood's patent planished sheet iron is given in substance as follows: It is made entirely of charcoal knobbed bloom iron, subjected to patented processes at certain stages of manufacture. The pig iron used is of best charcoal make from the Lake Superior region and from Missouri. With the exception of the pig iron itself, all the processes used in the making of the planished sheets are owned and operated by the W. Dewees Wood Company only. The pig iron is placed in a refining fire, where coke is used as a fuel. The metal is then run out and taken to what are known as knobbling fires, where it undergoes the process of refining, in which charcoal is used as a fuel. Over 600,000 bushels of charcoal, made on the company's property, and representing 16,000 cords of hard wood, are consumed annually at the works. On leaving the second fire, in a condition technically known as a "loop," the iron is hammered into blooms, which, in turn, are rolled into bars in the bar mill. The bars are then rolled into sheets, taken to the finishing department, hammered, trimmed, assorted, stenciled and packed for shipment.

The process, from start to finish, is illustrated in artistic half tone pictures from photographs taken on the spot. The book also contains tables of standard gauges and sizes of patent planished sheet iron and locomotive jacket iron, as well as the United States standard weight of gauges for iron and steel plates and sheets. In short, the publication is a useful hand book which will be valued by its recipients.

Pneumatic Riveters, Hammers and Drills.—A special catalogue, No. 9, has just been issued by the Chicago Pneumatic Tool Company, Monadnock Building, Chicago, relating to their line of riveters, hammers and drills. These comprise the Boyer and New Boyer pneumatic tools, the Chicago breast drills, Phoenix rotary drills, Chicago flue cutters, Whitelaw drills, boring machines and bolt nippers, &c. This catalogue, which consists of 64 pages, is, if anything, a more handsome publication than any of the catalogues previously issued by this company, although they have always been superb specimens of the printer's and engraver's art. Nearly every page presents an illustration of some form of work being done with pneumatic appliances or of some variety of pneumatic tools which the company are manufacturing. The variety of work done is very large and suggestions are given in these illustrations which will prove useful to many who have not hitherto deemed it advisable to employ pneumatic tools.

Blowers and Exhausters.—We have received from the Wilbraham Baker Blower Company of Philadelphia a copy of the 1900 issue catalogue of the Green patent positive rotary pressure blower and exhauster. Besides the descriptive matter in the catalogue, handsome half-tone illustrations showing the different types and patterns of both vertical and horizontal blowers serve to make the book most attractive and interesting. Full information as to connections, power required, efficiency of the blowers, speed they are capable of, &c., is thoroughly treated of in a brief but comprehensive form. A double page cut in the back of the catalogue illustrates a shipment of Green gas exhausters on board cars ready for forwarding to the Semet-Solvay Company of Syracuse, N. Y., for use in the by-product coke oven plants of that company.

The lake shipbuilding industry is at present enjoying a season of unprecedented activity. Thirty-seven steam vessels, of an aggregate carrying capacity of 185,500 tons and 45,950 horse-power, are now in course of construction at lake shipyards, representing an estimated outlay of \$9,000,000. Nearly all these are steel freight vessels, and a majority of them are designed to carry from 6000 to 9000 net tons of ore.

HARDWARE.

Condition of Trade.

GENERAL trade conditions show no especial change, but conservative buying, by both the large and small trade, is a feature of the situation. The distribution of goods is liberal, while orders, for the most part, cover only immediate requirements and are for small lots. Cautious merchants are avoiding the accumulation of large stocks, but are keeping assortments up to the requirements of their trade. There is a hopeful feeling among the trade that they can dispose of present stocks before any serious change occurs in values. Concessions in prices are made a little more freely by jobbers, but not to an extent to cause a break in prices.

Chicago.

The demand for Shelf Hardware continues better than at the corresponding time last year. The pressure of advancing prices not being felt now as then, the daily orders are influenced more or less by the varying condition of the weather. For a few days last week the stormy conditions which prevailed in the Northwest caused some falling off in trade, but since then the volume of business has picked up and is again in full swing. New stocks are not being ordered quite so freely as a year ago, but some of these are coming in from time to time and assist in swelling the weekly sales. Retailers are reported to have no large stocks of staple goods, such as Nails, and are consequently placing orders steadily for them. The winter now being far advanced, jobbers are looking forward to the advent of spring weather in various parts of this territory, believing that business will then be greatly accelerated. They are looking confidently to an unusually heavy spring trade. Farmers have for some time been holding back their grain, waiting for higher prices. The elevators along the Western railroads are filled with grain carried on farmers' account. When this grain is marketed, which will certainly be during the spring months, money will be more plentiful than ever in the Northwest, and farmers will be able to purchase very liberally.

St. Louis.

An even better trade than for the same time last year continues. Orders run ahead in both volume and value. Wire Cloth still sells at \$1.50, and it is said that dealers have not held back their wants. Firmness in Black Sheets is more pronounced, and another 10-cent advance has been made by the mill which posted the last one. Galvanized Sheets showed a higher value by about 2½ per cent. Business on Builders' Hardware is satisfactory, and at prices last adopted. Small shelf goods are moving at new prices named on Cupboard Turns, Barrel Bolts, &c. Some lines which have all along been marketed at old prices have been given attention—notably Coffee Mills, which increased 20 per cent. in cost. Sporting Goods are in early action, and much interest is shown in advanced shipments of Golf, Tennis, Baseball, Football Goods and Fishing Tackle. Hammock trade is brisk for the season. In view of the liberal buying during last year the present extent of business is considered remarkable and as clearly establishing the country's prosperity. A feature clinching this opinion is that speculative stocking up has about ceased, and that present wants are felt from the home to the factory.

New Orleans.

A. BALDWIN & Co.—Business has been exceptionally good during the past month, owing to the improvement in price of the leading farm product, and orders have

been much larger and heavier than we have had the pleasure of receiving for some time back. This improvement gives evidence of continuing during the present month, and we look for an exceptionally heavy output of product.

Louisville.

W. B. BELKNAP & Co.—Trade conditions continue favorable. Heavy goods are moving freely in this market, as we presume they are in all; except those in the extreme north, where the rigors of winter prevent their large outdoor consumption. We are now approaching spring, and buyers are beginning to cast about for material to cover their wants. The "anxious bench" is not quite so populous as it was last spring and fall, but the congregation keeps up surprisingly well, and has to listen in most cases to what the preacher says.

We are pleased to say from the pews that trade in Kentucky is not entirely confined to Fire Arms and Ammunition, as might be supposed from the Associated Press dispatches, which in order to minister to the universal desire for sensations are sent out in lurid colors from our borders. There is a great deal of good peaceable merchandise moving in the accustomed way, as the earnings of our railroads will show. And the farmers throughout the country are preparing to put in crops other than dragons' teeth, so that the harvests will be quite normal, if the early and the latter rains and sunshine fail us not. In fact, entirely too much has been made on the outside of our domestic disturbances, and too many obvious lessons drawn for the benefit of would be learners, who doubtless know what this fable teaches from previous experience and reading. What has happened indicates a certain amount of vitality, and we think gives good promise for the future, and for those who cast their lot with us. The strong remonstrance against "boss rule" and "machine politics" is an evidence, as we say, of virility, which offsets in a measure occasional bloodshed. Of course, if we were content to sit down, as we read of our brethren in New York and Pennsylvania doing, and submit to anything the bosses chose to give us, we might pass for very peaceable people. But we have not gone quite far enough beyond the pioneer stage to submit without protest. Give us a chance now to learn who our Governor really is and possibly we shall have some fresh stories from our *literati*, Jas. Lane Allen and John Fox, Jr., to entertain fastidious readers with true accounts of the kind of people who really live down here.

Cleveland.

THE W. BINGHAM COMPANY.—Trade for February, so far, shows up well. The demand for seasonable goods is large, and from the present outlook it would seem that there may be a scarcity in some lines before the season is really started. This would apply principally to Wire Cloth and Screen Doors. Some of the smaller manufacturers of Screen Doors have taken so many orders that it would seem as though, with the delays in delivery of Wire Cloth, they would be unable to execute what business they have taken.

The demand for Steel Goods and Snaths has been large, but the movement of Scythes is slow. While possibly quite a few Scythes were carried over, yet we attribute the present hesitation in buying to the price of the goods. The dealers are evidently expecting to wait until they need the goods.

The demand for Axes still continues good, although it is late in the season. This in the face of the fact that the present winter has not been very favorable for the Axe trade.

While the jobbers as a whole have very large stocks, yet the cutting of prices has not as yet amounted to

much, and with the trade in its present condition it would not seem as though it would be necessary to sell any materials below their present value.

Philadelphia.

SUPPLIER HARDWARE COMPANY.—Trade conditions since the date of our last letter have continued without any apparent change in volume. And while the various changes in weather conditions which have recently presented themselves have doubtless had some influence for temporary good or bad during this time, the general results will probably foot up about the same, at least can be looked upon as satisfactory and quite equal to corresponding trade of 1899, and it is but natural to infer that so long as interior trade is satisfactory to the retail merchants, so long as their trade demand is satisfactory and so long as they continue to fully realize that the starving of stock is of daily disadvantage to them, so long will they continue to keep their assorted stock of goods quite up to the maximum in quantity consistent with ability to pay.

We have at no time during the last fifteen months taken the pessimistic view of future values that some of the trade journals and isolated firms in the wholesale trade have had regarding the daily, weekly or monthly reigning prices, and we can assert both from observation and information that as a rule the wholesale merchants who have taken an optimistic view, instead of a pessimistic view, of the situation during this time have profited by the same, and if the consensus of opinion were taken to-day it would be found that both in wholesale and retail circles those who have taken pessimistic views of values and trade have suffered through their action. The far reaching results of a pessimistic prediction, whether of a firm or a trade journal who have aired their views, cannot be well estimated in dollars and cents. The actions of an individual working on his own opinions naturally affect such a person alone, but those whose opinions have been sent broadcast, and proved so erroneous, probably may feel themselves responsible for untold mistakes. Now our personal predictions during the last fifteen months have shown themselves to be correct in the recent past, and we have no hesitation in saying that we believe there is no cloud on the horizon in the immediate future, always reserving the right to exclude the unexpected on a limited line of goods which are controlled and manipulated by combined capital or trusts.

History is likely to repeat itself, but history does not show revolutionary action in receding in a day, night or month. Should a change in the administration of our Government occur during the present year, or after a few months should the various railroad mills or Structural Iron plants have completed their now large back orders, should the stock of raw material once again reach the maximum stock on hand, with a possible output in excess of demand, in that distant future the experience of the past should be of value to all in trade, but even then there is no visible reason why manufacturers should cut off at one fell swoop the difference in price between a possible profit and a certain loss; that is not history repeating itself in that short duration of time, but experience is that it extends over months or years before the minimum is again reached. Great Britain, once our great rival for the trade of home products, and now our greatest rival for export trade, has called from the various factories fully one-half of all the able bodied young men for the war in the Transvaal. Many of them will be likely to remain in the gold or diamond fields, where they were likely to have gone before had they means to reach there; many of them will return wounded and incapacitated for future work, some of them will never return, but will fall in the battle field or from disease; and admitting that war is always a great misfortune and greatly to be deplored and thousands suffer the consequences, it will also be admitted that the results of transferred trade from the cause named have not at

least heretofore been shown to be to the advantage of those who have lost trade, and millions of dollars of sacrificed trade will, owing to existing conditions, be transferred to this country.

We see no disposition among the wholesale merchants in our market to sacrifice goods below their ability to replace by purchases at present prices. All are free to admit that many orders for future shipments of some kinds of season goods have been taken at a less price than they can be replaced. Notable among these is Green Wire Cloth, which is not only held at an advanced price by manufacturers, but the ability to produce enough for the season's wants or requirements is quite questionable. Screens and Screen Doors for future delivery are a further instance of a sacrifice of profits. The condition of the Poultry Netting market is uncertain, and the demand for Cross Cut Saws has reduced the stock in the hands of jobbers, and manufacturers are far behind orders. Axes for 1900 rule higher in price, and manufacturers express a doubt of being able to supply the increased demand.

The smallest advance made on any one article of Hardware or its correlatives for the year 1900 has been upon Lawn Mowers. The advance made on these does not by any means represent the actual increased cost of the product. The cheap grade of goods made by some makers especially for the department store trade and catalogue houses has been recognized by manufacturers who do not cater to or care to sell this class of trade—we might have said refuse to sell. The latter class of manufacturers, in order so far as possible to protect the legitimate channel, the retail Hardware trade, have refrained from making an advance, which they feared might result in a transfer of trade to the first channel named. How far this will be appreciated remains an unsolved problem to be determined later in the season, but the consensus of opinion of the retail Hardware trade is that upon high grade goods the former channel will not long be a prominent factor. It is an assumed fact that the various retail Hardware organizations which are to meet, especially during this month, will naturally unite in an effort to solve the question, Is the exclusive retail Hardware trade's usefulness at an end? We admit we are not among those who believe it is, but believe that the necessities of their usefulness will continue to be apparent and will increase as the years pass by.

It is a well-known fact that our firm have always been a strong advocate of Hardware associations. Years before the National Hardware Association was organized the writer was one of the founders of a local Hardware association in this city. He became convinced of the beneficial effects that might accrue and that acquaintance and even friendship might be consistently and judiciously combined with business. As years passed on these city organizations extended throughout the country until it came to a time when State and sectional organizations were formed; then the National Hardware Association came into existence as the father of all Hardware associations. And it is a great source of satisfaction to the members of this association, and we believe should be to the general jobbing trade of the country, to see the example set so ably followed in the formation of retail Hardware associations, and among their prominent members, and especially officers, may be conspicuously found men of ability and conservative views, both of which are essential to assured success. The success of the Hardware manufacturers of the United States depends almost wholly upon the success of the wholesale jobbers, and the success of the wholesale jobbers is dependent upon the success and prosperity of the retail merchant, whose legitimate channel is the contractor and the consumer, and whose success depends upon the prosperity of the country.

To those retail Hardware associations who meet during the present month we desire to extend our hearty indorsement of their efforts for the betterment of trade and increased friendly relations with each other. The

Pittsburgh.—Demand for Barb Wire is light, buyers placing orders only for immediate wants. For domestic Wire we quote Painted Barb Wire at \$3.65 in carload lots to jobbers, with an advance of 15 cents for Galvanized.

all f.o.b. Pittsburgh; terms 30 days, or 1 per cent. off in ten days.

Smooth Wire.—The demand for Smooth Wire is fair, with a firm market. Quotations are as follows, f.o.b. Pittsburgh; terms 30 days, or 1 per cent. off in ten days:

To jobbers in carload lots.....	\$3.05
To " in less than carload lots.....	3.07½
To retailers in carload lots.....	3.20
To " in less than carload lots.....	3.30

Pittsburgh.—There is a fair demand for Smooth Wire, but it is not nearly so large as is usual at this season of the year. We quote: To jobbers in carload lots, \$3.05; to jobbers in less than carload lots, \$3.07½; to retailers in carload lots, \$3.20; to retailers in less than carload lots, \$3.30, all f.o.b. Pittsburgh. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14 inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, \$1.10.

Cordage.—In less than carload lots Manila Rope is quoted on the basis of 7-16 inch and larger at 15½ cents per pound. The Sisal market shows some weakness, and Sisal Rope can be purchased on the basis of 7-16 inch and larger at 10 cents per pound in less than carload lots. Demand for both Manila and Sisal is moderate. Manufacturers' quotations for Rope in less than carload lots are as follows, with a reduction of ¼ cent per pound for carloads:

	Per pound.
	Cents.
Manila, 7-16 inch and larger.....	15½
" ¾ inch.....	16
" ¾ and 5-16 inch.....	16½
Sisal, 7-16 inch and larger.....	10
" ¾ inch.....	10½
" ¾ and 5-16 inch.....	11
" Lath Yarn, Medium and Coarse.....	9½

Manila Tarred Rope, 15 thread, is quoted at 15½ cents, as is also Manila Hay Rope, Medium.

Binder Twine.—The Binder Twine market is quiet but firm. Buyers are not placing orders freely in view of present prices, and also owing to the fact that considerable of last year's stock remains unsold in some of the wheat growing sections. The opening of Manila Hemp ports appears to offer no immediate relief in the price of Manila Hemp. The following quotations are made on Twine, f.o.b. New York, Philadelphia or Boston, with a reduction of ½ cent per pound for orders less than a carload lot and over 10,000 pounds, and a reduction of ¼ cent per pound for carload lots:

	Cents.
White Sisal, 500 feet to pound.....	11½
Standard, 500 feet to pound.....	11½
Manila, 600 feet to pound.....	14½
Pure Manila, 650 feet to pound.....	15½

Glass.—Nothing of interest has transpired in the Window Glass market during the past week. An opinion prevails that the present low prices will continue for some time, as there are no indications of an immediate change in present conditions. The following are the American Window Glass Company's quotations for carload lots from factory:

	Per cent.
Single strength:	
First Bracket.....	85 and 25
Second and Third Brackets.....	89
All above.....	90 and 5
Double strength:	
First five Brackets.....	89
60-inch Bracket.....	90
70 to 100 inch Brackets, inclusive.....	90 and 10 and 5
All above.....	90 and 20

These quotations are f.o.b. factory for the East. A commission of 2½ per cent. is allowed jobbers for selling. Jobbers' extreme prices for Window Glass east of the Alleghanies are 85 and 10 per cent. discount for the first bracket, and 85 and 20 per cent. discount for all other brackets, of either Single or Double Strength, for less than carloads from store.

Oils.—**Linseed Oil.**—The price of Flax Seed is kept at a high point by the controlling interest in the market. Linseed Oil consequently remains firm at unchanged quotations, and is being purchased in moderate quantities. City Raw is quoted at 56 cents in lots of five barrels or more, and at 57 cents in lots of less than five barrels. Outside brands are 2 cents less per gallon.

Spirits Turpentine.—The market remains unchanged at last week's quotations, and is firm but quiet. A limited quantity of Turpentine is changing hands, large consumers not being attracted by the high prices ruling. Quotations are as follows: Southern, 56 cents; machine made barrels, 56½ cents per gallon.

The Hardware Store in Winter.

BY B. N. B.

THE months of January and February are dull months in the Hardware business.

EFFECT OF DULL SEASONS.—In too many stores the dullness of the times is made an excuse for relaxation, and clerks and proprietor find it hard to "kill time," thus contracting habits of laziness which require months of brisk business to eradicate.

OCCASIONAL DAY OR AFTERNOON OFF.—It is a good plan to give the clerks a day or afternoon off by turns. An outing will do them good. They will work better and with more zest.

PREVISION CONCERNING DULL SEASONS.—But it only requires ingenuity and thought to have profitable employment for the men even in the dullest season. Taking stock and winding up the year's business come at this season and furnish abundant work. After the stock is all counted and disposed of comes the dull time. The old samples can be removed and replaced with new ones.

DISPOSING OF DEAD STOCK.—Usually there are many odds and ends of unsalable or slow selling goods, and former samples, which can be gathered together and displayed either in the window or in a prominent place near the door, where every one entering the store can see them. These should be priced low to insure their speedy removal.

OTHER PROFITABLE EMPLOYMENT.—Then Saw Frames can be painted or Axes handled, Varnish put up in bottles or cans, &c.

SOLICITING.—Again, in dull times possible buyers can be looked up, their names learned and they solicited for trade. Perhaps the proprietor learns that John Jones intends building a house the coming season; then it is in order to see him personally or send a clerk to see him for the purpose of selling him Hardware for it. If no sale is made the effort is not wasted, as it is an economical method of advertising and shows that the trader is progressive. A man to succeed now must go after trade and not wait for it to come to him.

FEBRUARY SALES.—Some merchants advertise a cheap February sale, stating that goods will be sold below regular prices.

WHEN ADVERTISING IS NECESSARY.—An idea seems to prevail that because the times are dull and sales slow the dealer can afford to drop his advertisement in the local paper. This is the time above all others when advertising should be pushed. It gives a good impression and looks progressive and up to date to see a firm advertise adequately and in a catchy manner.

Henry Disston & Sons.

BUSINESS during 1899 was larger in volume and in money value than in any year ever experienced at the Saw, Tool and File Works of Henry Disston & Sons, Philadelphia. The amount of orders already taken for delivery during the current year is believed to guarantee a still larger business during 1900, to meet which they are making extensive additions to the several acres of buildings which they use and which are already taxed to their utmost capacity.

They have just given out contracts for a three-story brick building, 150 x 50, also for a battery of boilers of 1450 horse-power for their steel works and one for 450 horse-power for their File department. These and other extensive additions and improvements will be pushed to completion as rapidly as possible, so that they may be able to meet the ever increasing demand for their well-known specialties.

Chas. Marstrand, Jr., has succeeded Marstrand & Hall, Bremond, Texas.

Edward Failing.

EDWARD FAILING, a member of the Hardware house of Corbett, Failing & Robertson, Incorporated, of Portland, Oregon, died at his residence on the 29th ult. He was a son of the late Josiah and Henrietta Ellison Failing, and brother of the late Henry Failing.

Mr. Failing was born in New York City, December 18, 1840. He attended public school No. 3, corner of Hudson and Grove streets, and when he left New York to come to the Pacific Coast was at the head of his class. In 1858 he came to Oregon by way of Cape Horn with his mother, sister and younger brother, joining his father and two older brothers who had come to Oregon in 1851 and established the house of J. Failing & Co.

After attending school a few years in Portland he began at the age of 17 to clerk for H. W. Corbett, who



EDWARD FAILING.

was then in the general merchandise business. In 1867 he was admitted as one of the partners of the firm of H. W. Corbett & Co. On January 1, 1871, Henry Failing and Mr. Corbett consolidated their business, forming the firm of Corbett, Failing & Co., with John A. Hatt, Marshall B. Millard, Edward Failing and James F. Failing as junior and active partners, and conducted a wholesale Hardware business.

This firm continued with a few changes in partners until January 1, 1893, when their business was consolidated with that of Foster & Robertson, forming the present corporation of Corbett, Failing & Robertson, Incorporated. Mr. Failing was manager of the corporation until about a year ago, when his poor health compelled him to resign, but he still retained his interest in the business.

In August, 1866, Mr. Failing was married to Miss Olivia B. Henderson, who with nine children survives him. While Mr. Failing was not a member of any church, he was for many years very active in the First Baptist Church of Portland, being a firm believer in the great fundamental principles of the Baptist denomination. The following tribute to his memory is taken from the *Daily Oregonian* of Portland:

Edward Failing was a rare type of a man. He was high minded, clean and absolutely honest, and he always did what he knew beyond question to be right. No power could move him to do that which his conscience did not approve. He belonged to a mercantile school, unfortunately small nowadays, which regards business as a

personal trust, not a warfare; which stamps as a counterfeiter a merchant who employs trickery or deception. He made friends slowly, but he held them all. In his business habits he was methodical. To unflagging industry he added keen intelligence. He was kind hearted, generous and pure.

Edward Failing was a well read man. He devoted much time to the best books. History was his chief delight, and he pursued its study assiduously until his last illness. He was a thorough Oregonian, and had complete knowledge not only of her annals, but of her traditions and the forces which made this commonwealth. His was a disposition which shrank from strong public gaze, and he preferred, away from business, the seclusion of his home. His moral fiber was of the finest, and he stood in the mercantile community for the very best.

Trade Items.

IN CONNECTION with the Tasmania sawing contest the announcement of E. C. Atkins & Co., Indianapolis, Ind., in our advertising pages will be of interest. Reference is made, it will be observed, to the honors won by their Saws.

THE NATIONAL CUTLERY COMPANY, Philadelphia, have met with such an encouraging degree of success with their specialties that they are constantly adding to their lines, and expect in a short time to furnish every style and variety of Shears and Snips, always aiming to produce no goods but such as are of the first quality.

KILBORN & SMITH have succeeded Weekes & Kilborn in the Hardware, Stove, Farm Implement and House Furnishing Goods business at Harrisville, N. Y. A. E. Kilborn will act as general manager of the business and W. A. Smith (who has been with the old firm for the past six years) will have charge of the tin shop.

It is reported that George W. Weymouth, formerly connected with the Steel Ball manufacturing interests of Fitchburg, Mass., and now Congressman for the Fourth Massachusetts District, has accepted the position of general manager of the Atlas Tack Company, Taunton, Mass., made vacant by the death of L. O. Garrett, and that he will retire from Congress at the end of his present term and give his entire attention to the Tack business.

A VERY large order for Canvas Goods and Leather Leggings was recently placed by the Gray & Dudley Hardware Company, Nashville, Tenn. Having announced the fact that they were in the market for a bill of these goods and would make their purchases about January 12-15, nine manufacturers were represented in Nashville at that time, seven in person and two by a line of samples. The result of the deliberations was the placing of a \$25,000 order, divided among the various manufacturers represented.

Price-Lists, Circulars, &c.

LOUDEN MACHINERY COMPANY, Fairfield, Iowa: Illustrated catalogue, Hay Carriers and Barn Door Hangers.

SCHOVERLING, DALY & GALES, 302 & 304 Broadway, New York: An illustrated catalogue and price-list of Bicycle Sundries.

STANLEY & PATTERSON, New York: Catalogue and price-list of Matchless Electric Cigar Lighters, which are illustrated, and are made in a number of styles.

THE A. I. ROOT COMPANY, Medina, Ohio: The February edition of the Bee Keepers' Supply catalogue.

CHESTER MFG. COMPANY, 37 Warren street, New York: Nickel Plated Toilet Specialties are illustrated with prices in a circular.

EDWARD K. TRYON, JR., & Co., Philadelphia, Pa.: Illustrated catalogue and price-list devoted to their Fishing Tackle department.

THE BRIDGEPORT MFG. COMPANY, Bridgeport, Conn.: An illustrated catalogue and price-list of Pliers, Cutters, Shears, Scissors, Nail and Tack Pullers, Can Openers, Screw Drivers, &c.

THE W. J. CLARK COMPANY, Salem, Ohio: Illustrated circular of Lane's Joist or Timber Hanger, mill and elevator Buckets, factory Tote Boxes, Pails, Washers and Hose Couplings.

O LINDEMANN & Co., 81 Beekman street, New York: Illustrated catalogue and price-list of Cages. These include Brass, Japanned and Tinned Wire Cages, for birds, parrots, squirrels, mice, &c., also Cage Supplies.

W. A. Hartmann has succeeded C. D. Bevington & Co., Winterset, Iowa.

Iowa Retail Hardware Association.

THE Savery House presents a busy scene to-day (Wednesday), as many Hardwaremen are arriving from all parts of the State, augmenting largely the numbers who came on Tuesday, to attend the annual convention of the Iowa Retail Hardware Association at Des Moines.

Largely Increased Membership.

The year has witnessed a large increase in membership of the association, owing in good measure to the indefatigable efforts of President H. A. Cole and Mrs. Henrietta Cupper, the secretary. The work done by Mrs. Cupper, who has recently made a tour of the State, has been most efficient and successful, resulting in securing as members more than nine out of every ten firms called upon. When the objects of the association are explained and the necessity for united action made clear, nearly every Hardware merchant of any enterprise is said to be ready to connect himself with the movement and to help along the good work.

The list of members, which we defer to our next issue, will indicate the representative character of the gathering.

A meeting of the Executive Committee was held this forenoon to act on important matters connected with the association's policy and put final touches to the programme.

Opening of Convention.

The opening session was large and enthusiastic. After the organization, with calling of roll and election of new members, President Cole delivered his address, which was a clear and practical presentation of association work, and was received with manifestations of hearty approval. Mr. Cole's address was as follows:

President's Address.

In reviewing what we have been able to accomplish in the one short year of our permanent organization, and the possibilities for the great future that is all as yet before us, the first thing that impresses me is that every retail Hardware dealer in the State should join our association. He should do it, if for nothing else, for the unselfish good of our profession, even though he knew at the time that he would not be able to attend a single convention. Every Hardware dealer in the United States should gladly invest the \$3 or \$5 for the good of his fellows. Let us put this unselfish phase of the question in the foreground, and every one to whom this invitation may come, in Iowa and elsewhere, sit down and immediately send in your application for membership to your own State organization, if you have one, and if you haven't and are not willing to organize your State yourself, send in your membership to the Iowa Association, or in six months to our National Association, for we are going to have one.

Remember that the

HIGHEST AIM OF OUR ASSOCIATION

is to so elevate the feeling between competing Hardware merchants that bitterness, acrimony, hatred and jealousy will be the exceptions in our calling, and if we stopped at this one fact accomplished, I, for one, would feel that we had justified every effort and every dollar that it has cost us.

FRIENDLY, MANLY COMPETITION.

Even this, seemingly the least practical side of our work, has its financial side. If you point me to a Hardware dealer who has let this spirit of animosity get the uppermost hand and who systematically does his best to undermine his competitor, I will show you where he makes ten enemies of his own where he makes one for his competitor. In putting this better side of our Hardware

life forward we elevate our profession and make our lives as Hardwaremen stand for something more than a daily grind for bread and butter. Friendly, manly competition, that while it uses all honorable means to advance one's own interests yet recognizes the competitor as having a right to respect and manly, honorable treatment is what our association stands for.

Now for

SOME OF THE FINANCIAL REASONS

why every retailer should join our association. I will promise any dealer in Iowa who will join the association, attend our annual convention, take part in the discussions and then simply work out in his own business the helpful suggestions he may receive that he will get back \$20 where he spends \$1. Where else can you get such odds? Take our last convention as an illustration. An enlightened grasp of the question of advertising alone and the application of the practical points brought out in the discussion of this subject has brought to our members or saved them from being squandered, many hundreds of dollars during the past year.

Take the question of

EASY PAYMENTS AND CASH CUSTOMERS, AND THE PROPER USE OF LEASE SECURITY ON TIME SALES,

and I know of one city alone where the thorough application of the points brought out would enable our four members in this place to pay every dollar of our association outlay, and then they would be ahead. Without exaggeration, I think this one question alone has made and saved to our membership, in cash, double the cost of the association, including the expense of members who attended our last meeting.

And now for some of the

VITAL QUESTIONS

that will undoubtedly come before us here at this meeting. How many hundred dollars have each of us lost by failing to make advances promptly as we could have done had our membership been larger and with more co-operation than we have? With our enlarged membership this year and as the result of our discussion many of us can still save ourselves from heavy losses. With a small membership many dealers foolishly sell at old prices long after advances occurred and make it impossible for other dealers who wish to advance prices to do so.

KEEPING HEAVY STOCKS.

Another question which is of vital importance to us is the attitude we should take from now on in buying goods and keeping heavy or light stocks. If any of our membership has a grudge against a jobber, let me tell him how to square accounts. Make him carry stock for you during the next drop in prices, and you will be in a position to call and shake, no matter how serious the grudge you may have.

DEPARTMENT STORES AND CATALOGUE HOUSES.

And right here I want to state that there are some things expected of our organization that we can never bring out. My opinion is that no organization on our part can ever kill off department stores or catalogue houses. They are here to stay until they die, as the result of their own fraud and deception on the public. We can, however, force them to pursue more honest methods of procedure. We can educate our trade so that they cannot be so easily swindled. Of course most of our intelligent dealers will tackle these questions without any association, but there is not a dealer in the State who will not solve the questions more intelligently and receive suggestions at our annual meetings that will repay him many times over for the time and expense of attending same.

LOCAL ASSOCIATIONS.

Here I have touched on but three or four questions of the hundred or more, all of them vital ones to our welfare, that came up at our last convention and will come up at this one, and I have made each one of our membership indebted to the association about \$1000 apiece. Fortunately this debt will be squared by each one doing his best to promote the growth and welfare of the association. We not only need the good will of the dealers of the State and their membership but we need our members to organize local associations, not necessarily to combine on prices but to promote this spirit of friendliness and co-operation and to post each other on dead beats, that each has had experience with. As to whether such local associations would accomplish anything along the line of prices would depend entirely on circumstances and the dealers themselves.

LEGISLATION.

We want your influence to secure needed legislation. At the present time we are co-operating with the State Grocers' Association to have enacted a new garnishment law that will be worth many thousands of dollars to the merchants of Iowa. There is hardly a merchant here who has not got accounts against parties whose income is hundreds or thousands a month, and still you can't collect. We want a law that will make everything above \$8 per week subject to garnishment.

HOUSE FURNISHING GOODS.

We propose to have a committee at the next State Grocers' Association, to prevail on their membership to let our line of House Furnishing Goods alone, and not use it for advertising at cut prices.

LOOSE CREDITS.

Then there is the great question of extending credit to those who ask it. We considered it at our last convention and will consider it again here, for we need an annual experience meeting on this subject, particularly to brace us up and open our eyes to the importance of this subject. Many of us fail to appreciate that when we extend credit we are practically loaning money and should weigh our applicants on this basis. I maintain there is an utter lack of system in our plan of extending credit, and with many of us almost a lack of sense. Let us give this important question at least an hour's discussion at this present session. I dare say one-third of the dealers in Iowa extend credit so loosely and to such an extent that they are unable to take their cash discounts, a thing that in my business last year paid the salary of my head clerk. Bring up every phase of the credit question, I beg of you.

CASH TRADE.

As stated above this great item of cash trade is really a powerful advantage to any competitor outside of this, and in cases where some manufacturers give them jobbers' rates, which can be largely overcome, I think the stores in question have no real advantages that we cannot avail ourselves of.

THE ERA OF TRASH.

To be sure they have pandered to a public taste for bargains till to-day they themselves cannot find seconds enough, or goods poor or cheap enough for the public maw. I point to Gray Granite Ware, practically worthless trash to-day, as a monument of department store method, and the inevitable end of manufacturers who pander to them; also the present value the public put on Tinware, as another instance. Gray Granite should be as good as it was ten years ago. Better Tin can be made to-day than ever before, but where is the man that can convince the public so, and where to-day is a manufacturer of Tinware whose goods can be banked on, and why not? I think we will find that in time even our good women will find that 99 in big black type is only 1 cent less than \$1, impossible as it seems now, and that advertising an article as reduced from \$1.50 to 99, when its general price is \$1, is a fact that will only

have to be brought to their notice a few times to destroy confidence in the firm who do it. Let us learn our lessons from them or any other source that have better methods than our own.

Let us give cash trade the benefit it is entitled to in price against time customers, systematize this feature and carry it out. Let us learn that the public do read advertising and spend money wisely and systematically along this line. Where the public want and can use good serviceable articles in seconds that really have merit, though imperfect, let us keep them and sell them as such, and at low prices. And then where possible, enlarge and improve our plans of displaying goods.

LET US PUSH LINES THAT ARE PROFITABLE.

and tie up as little money and effort as possible on unprofitable lines. On lines that department stores let severely alone, like Wire and Nails, because Hardwaremen sell them on so low a margin, let us try and bring these up to a point where they will yield at least a narrow margin of profit, and in doing this remember that your cost of doing business, figuring yourself reasonable rent and salary, is a legitimate part of the cost of every article that comes in your store and must be figured as such.

READ TRADE JOURNALS.

Another thing I want to urge on our membership, and that is, system in using and reading our trade journals. A few minutes systematically given every day to their study and quietly absorbing their suggestions will be of the greatest value to the retail dealer. Every dealer should take at least two of these journals. They are the best friends we have, and we can help ourselves in no way more than by taking them and studying them.

WHAT HAS BEEN ACCOMPLISHED.

And now for some of the things we have accomplished. The difficulties we have met; what we hope to be able to do in the future and what has been suggested as necessary for our future development and growth.

JOBBER.

1. The Iowa Jobbers' Association has pledged its co-operation and support toward any reasonable action in reference to catalogue houses and department stores. The spirit of the National Jobbers' Association is most friendly, and I can assure our membership that their co-operation can be counted on most heartily and from the start to correct abuses on the part of their membership as fast as they come up. And I here suggest we appoint a delegate to their next meeting, to present to them our wants and needs. Not only this, but I am assured of their co-operation in bringing manufacturers' attention to points wherein they are seriously injuring us by their prices and dealings with department stores and catalogue houses. Some of our largest jobbers who are not members of either of above associations have at times shown a decided tendency to help us, and at other times the opposite spirit. I will allude to this later.

GRIEVANCE COMMITTEE.

We have been unfortunate in having the secretary of our Grievance Committee resign in the midst of excellent work, and it has been impossible to fully supply his place in the middle of the year. The work of this committee is the heaviest load we have, and I suggest that the coming year this committee divide its work, assigning to a different member the supervision of the following heads:

Grievances as to Stoves and House Furnishings.

Grievances as to Builders' Supplies and Tools.

General grievances not classified.

No one man can do justice to his own business and properly carry this whole burden. While we have the assurance of many of the most prominent manufacturers of the United States that they will either keep their goods out of the hands of department stores and catalogue houses, or sell them only at the same price as to retailers, yet the great mass of these can only be reached through the influence and co-operation of our jobbers.

Remember that many manufacturers never visit us whose goods are on all our shelves. They can only hear arguments when these come from their customers, and they are the jobbers. To this large class we must talk through the co-operation of the jobbers' association.

This question of grievances is well considered by many to be the

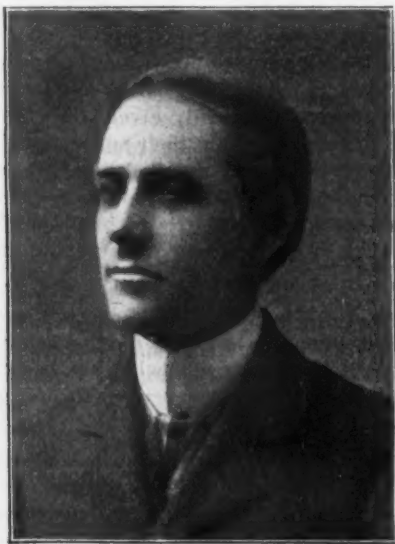
BIG TASK OF OUR ORGANIZATION,

and they are apt to get impatient at lack of immediate results in this department. I want to call all dealers' attention to several points in regard to the difficulty of getting results here, where the party complained of tries to balk the proceedings.

DIFFICULTIES.

First, our own membership are very slow about filing complaints. It is useless to file them till they are certain of the circumstances, and it takes time to get these things down fine.

Next, when a complaint is filed and taken up, the jobber or manufacturer must have time to look into the question, as it is their salesmen who are at fault, and then comes several more weeks consumed, and the job-



H. A. COLE, President.

ber assures you he will put a stop to it, and several more weeks before the dealer complaining finds out whether it is done or not.

This question of grievances is really the biggest proposition we have to solve, and it is by far the most delicate one, and far reaching in its influence. If we are unwise and unreasonable in our claims, and in our way of presenting them, we will show far less results and do ourselves more permanent harm than if this work is in the hands of a safe committee man. Courtesy and diplomacy and everlasting stick-to-itiveness is what we want on the part of our grievance committee. These qualities will win co-operation, while an attitude of always being ready for a red hot fight and not give the other fellow a show to mend his ways, is very apt to get the fight without getting the wrong righted. Don't understand above as in the light of trying to excuse the little tangible blood we have drawn, but I assure you, all things considered, your

GRIEVANCE COMMITTEE HAS DONE WELL

this first year of our existence.

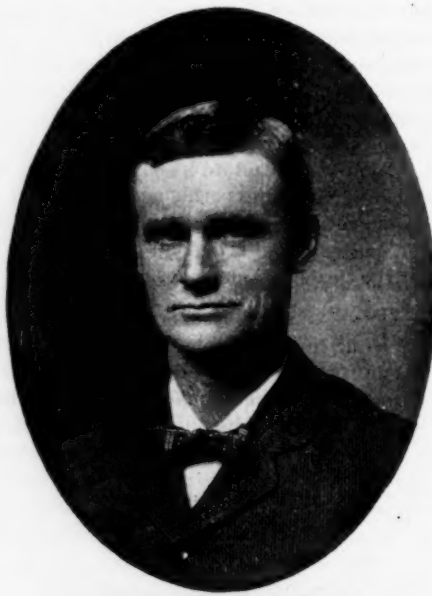
The fact is, when dealing with a very large jobber and manufacturer, a local State committee can do very little. They will heed our complaints in Iowa, and turn around and sell every catalogue house and department store all around us. A very amusing case of this kind occurred. A certain jobber gave up a \$1500 customer in Cedar Rapids in response to our request, but inside of two weeks we found he had sold a full line of Hard-

ware, special brand goods included, to a new catalogue house in Omaha.

This illustrates the imperative necessity of a

NATIONAL RETAIL HARDWARE ASSOCIATION,

which can first of all count on the loyal backing of its several thousand members, where we have but a few



S. R. MILES, Vice-President.

hundred. We must have an organization that can heed the complaint of a retail dealer, whether from Maine or California, and we want its organization so broad that any dealer in the United States, who is a legitimate retail dealer, can join by paying his dues, whether his State is organized or not, even though the executive work all be vested in officers of State associations.

The minute we say to any manufacturer or jobber,

"YOU MUST CHOOSE BETWEEN THE TRADE OF THE RETAIL DEALER AND THAT OF CATALOGUE HOUSE AND DEPARTMENT STORE,"

we have won our battle, and will find very little to fight about. We can't say this till we have a national asso-



MRS. HENRIETTA KUPPER, Secretary.

ciation. We have corresponded with many prominent Stove manufacturers about their attitude, and these who to-day are most flagrant in violating our interests, assure us they are ready to mend their ways. If I am not mistaken, Stove manufacturers are to-day doing considerable of this selling to department stores, and this should be the first matter to command the attention of

a National Grievance Committee. If it is done from this standpoint, in 24 months I predict the department store and catalogue house will either be peddling Ranges at \$68 apiece, or be forced to buy a foundry.

WE CAN PREVENT THEIR GETTING

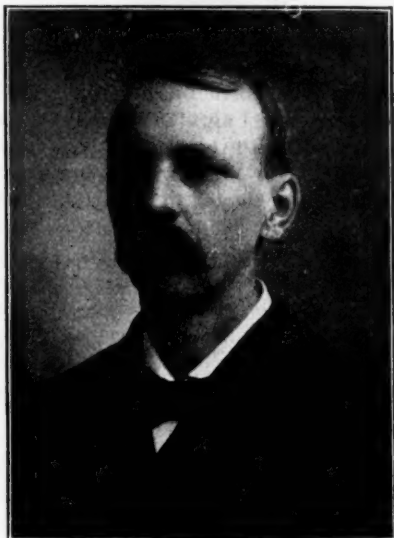
any of the well known or well made Stoves, and our battle would be won. Our best and most far reaching work of this kind must be done quietly, and two things have been done this past year, as result of work of both retail and jobbers' associations, that I am not even at liberty to mention in this address. Yet there is not a retail Stove or Hardware dealer in the United States who is not benefited by one or the other of these two associations.

As I last year mentioned Henry Disston & Sons in an unenviable light, I want to here state that they are ready to accede to any reasonable plan of the retail dealer which can be devised to correct abuses to which their line is subjected.

To illustrate the caution that must be used, a little catalogue house in Omaha published the resolutions of the Nebraska Implement Association as an advertisement and commented on them.

ANOTHER REASON

for a national association is that the expenses of a paid secretary, and the incidental expenses of a national



JACOB SEITHER, Of Executive Committee.

association would be less in the aggregate than the separate expenses of ten States, where each tried to carry on the grievance work at all aggressively, and the grievance work would be 100 times more effective.

The following plan has been submitted by your president and accepted by your Executive Committee, as Iowa's plan for a National Retail Hardware Association, and I urge that you delegate authority to your Executive Committee so it can assist to organize a national association at once, in connection with the ideas of other States. If the different State conventions merely discuss plans without taking some definite action, it will put a national association off another year.

IOWA'S PLAN FOR NATIONAL RETAIL HARDWARE ASSOCIATION.

1. Membership in any State retail Hardware dealers' association constitutes the party a member of the National Hardware Dealers' Association.

2. Each State organization is to be entitled ——— State Branch of the National Hardware Dealers' Association.

3. The Executive Committee of the national organization shall have power to apportion the expenses of its maintenance equally among the different State organizations in proportion to the membership of same.

4. The executive members of the National Hardware

Dealers' Association shall consist of the president, vice-president, secretary, and chairman, or secretary, of the Grievance Committee, and Executive Committee of the different State branches.

5. The National Hardware Dealers' Association shall be officered in the usual way, and shall have power to



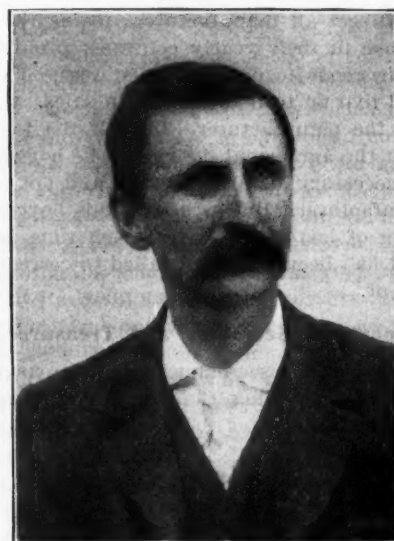
A. T. NELSON, Of Executive Committee.

employ a paid secretary to carry out the work of the National Association and the National Grievance Committee, all officers of same being elected by the above executive membership.

6. The idea underlying the national association shall be to concentrate the influence of the membership toward correcting abuses suffered in any State, by any member of the organization; also to furnish early news of advances and market changes and in general to make more effectual the ideas underlying the different State organizations.

The minutia of the constitution and by-laws and the working rules for the national organization would necessarily be furnished by themselves at their first or subsequent meetings.

The above seems to me to be the only practical way



H. C. CHAPIN, Of Executive Committee.

of utilizing the membership of the State organizations and of concentrating their influences toward the betterment of our calling.

This is only offered as one of the many possible plans of organization which will probably come up at the meeting held for this purpose March 12.

One of the strong reasons that has recommended this particular plan is it would be

ABSOLUTELY EQUITABLE

as between the States and would utilize all work done up to this time.

And now a final word of caution I hope our State association and our national association will always heed. We must

NEVER BITE OFF MORE THAN WE CAN CHEW, as the old saying has it. The boycott and black list is a terrible weapon, if used. If used hastily or unwisely it has always reacted against the party using it.

In our organization no firm should ever be put on the unfavorable list until

EVERY OTHER MEANS HAD FAILED

to correct the abuse complained of. The former president of the National Jobbers' Association told me that up to a year ago, when I talked with him, they had never had a grievance against a manufacturer that they had not been able to adjust or get in the way of adjust-



G. L. MILES, Of Executive Committee.

ment by seeing the party and calling their attention to it in a fair spirit, without threats or bluster.

BOYCOTT LAST RESORT.

If we can get all manufacturers to incorporate just such a clause in their yearly contracts prohibiting the sale of their goods to department stores and catalogue houses, and live up to it in their own sales, it is all we can ask of the manufacturer. Then if the jobber fails to carry out the agreement, he should be boycotted, if a boycott is necessary, as a last resort, and not the goods of the manufacturer. But as above, this boycott should be the thing of last resort, after much time and every other resort had been tried and failed to correct the evil complained of.

Reports of Secretary and Treasurer.

The reports of the secretary and the treasurer were also presented, indicating the flourishing condition of the association. We defer these reports until our next issue.

Subjects Before Convention.

Those in charge of the programme are to be congratulated on the interest and practical importance of the subjects for discussion, touching as they do on the work of the association as a whole and the business methods which can be advantageously employed by retail merchants. In this way the association promises to be influential in both directions and thus be of substantial benefit to the membership.

The following paper was read by E. H. Norris of Cedar Rapids, entitled

What Plan Can We Adopt to Persuade Dealers to Patronize Only Such Jobbers As Are Friendly to the Association?

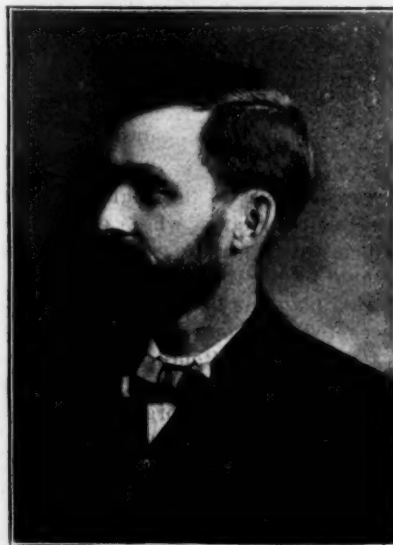
In a letter from the chairman of your committee on programme the above subject was given me for a ten-minute talk. The nature of his communication precluded



L. H. KURTZ, Of Executive Committee.

any possibility of excuse, except possibly severe sickness or death. As I have no inclination to plead the latter I accept his opinion that I am "in for it." I take the liberty of incorporating with this paper a brief report of my work as secretary of the Grievance Committee. That I am not permitted to look you in the eyes and say what I have to say, instead of sending you a commercial *billet doux*, is a matter of sincere regret with me.

Circumstances have plastered my time with mortgages, and each day sees one of those mortgages foreclosed. I presume you think it strange that these prosperous times should develop mortgages, but they do in one way or another, and if this seems a paradox to any of you I will remind you that this association has a mortgage on every



M. W. KEATING, Of Executive Committee

one of its members also, whether it is recognized or not; and this is part of my subject.

GRIEVANCE COMMITTEE.

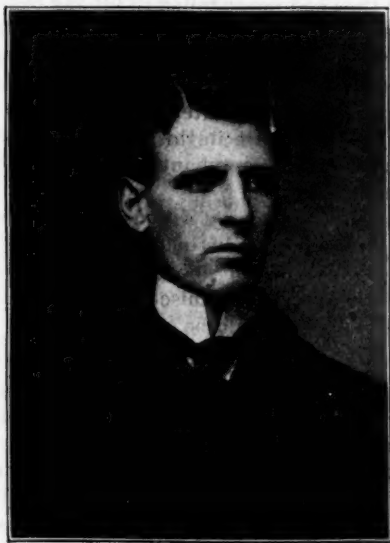
At the last annual meeting I was elected a member of the Grievance Committee. At its first meeting at the Savery Hotel this committee asked me to be its secretary. It was voted that I should fill the position the balance of the year. This I reluctantly undertook to do. Business

matters took such shape in May that I knew it would be impossible for me to give as much time to the association affairs as their importance demanded. I therefore wrote several members of the Grievance Committee, as well as the president of the association, asking that some one who had more time assume my duties on this committee.

That I did not get the release asked for would seem to argue the necessity of a salary for the secretary of the Grievance Committee, and I may say frankly that the association expects too much if in the future it asks this officer to do, without remuneration, the work falling to his care as it should be done. My short experience points toward a National or Interstate Association, with paid secretaries, as the most practical and economical methods of accomplishing results.

TROUBLE WITH A LARGE JOBBING HOUSE.

Right here I am reminded of my unsatisfactory experience with one of the very largest jobbing houses in the country (some of whose salesmen, I think, are honorary members of this association), who took the position that they could not promise our association to work with it because the law of the State in which they carry their stock of goods declares against trusts and combinations! Yet I am informed that the Northwestern Association of Retail Hardware Dealers brought this concern to see the



HARRY S. VINCENT, Of Executive Committee.

light. I am tempted to think that the trouble with this jobbing house lay not in its eyes—in fact, they have the reputation of having very keen eyes—but in the fact that the power of the association was not strong enough to make them take notice of our view.

HOUSES IN SYMPATHY.

Since last February I have had assurances of the following houses that they are in sympathy with us and would do nothing to hinder the objects we have set out to accomplish. In most cases they corrected abuses which we found to exist. They are: Hibbard, Spencer, Bartlett & Co., Chicago; Cattaraugus Cutlery Company, Little Valley, N. Y.; Crane, Churchill & Co., Omaha; Comstock-Castle Stove Company, Quincy, Ill.; Henry Disston & Sons, Philadelphia; Gibbs Mfg. Company, Canton, Ohio; Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.; M. & D. Range Company, Chicago, Ill.; Rathbone, Sard & Co., Aurora, Ill.; Schneider & Trenkamp Company, Chicago, Ill.

MAKING COMPLAINTS.

This list is not a large one, yet to obtain the results as we have them meant the expenditure of much time and effort. Very frequently, before we could get the complaint in shape to present to the manufacturer or jobber, we were obliged to write several letters to the member making the complaint; and I want to urge, for the benefit and peace of mind of my successor, that the member making a complaint in the future state names, dates and

circumstances, and accompany his array of facts with all the written evidence it is possible for him to furnish. You want to remember that in some cases you are fighting a wily foe who will take advantage of any weakness in the case you present.

A STORY WITH A MORAL.

Coming back to the subject given me for a talk, "What Plan Can We Adopt to Persuade Dealers to Patronize Only Such Jobbers as are Friendly to the Association?" I am forced to smile—a serious smile. I am reminded of a story, of which the following are the essential points: Once there was a man who became sick—very sick. After trying various doctors without relief he made a collection of all the patent medicine advertisements he could find in papers, almanacs and other exponents of the higher literature of the day. These nostrums he took in alphabetical order until he scarcely knew whether he was sick or embalmed; his condition was serious indeed. About this time one of his hair trigger friends said he could prescribe a medicine that would end his sufferings. He explained that it would be mighty pleasant to take and would make him feel good during the treatment; so the potion was ordered and the patient doped with untiring zeal. As he doped he smiled, but each day his smile grew thinner and more wan, but none the less persistent. One bright sunny morning the friend called to see what was left of the sick man and found him resting peacefully in bed. The smile was still there, but it was not a smile of recognition; it was a smile of rest, perfect rest—he was dead.

BUYING OF UNFRIENDLY JOBBERS.

The members of this association who buy of jobbers unfriendly to this association, its aims and its methods, do so, I take it, for just one reason, to wit: Bait in the shape of low prices; low prices on such items as the dealer can keep posted. Not uniformly low prices, but, as I said, "baits." A dealer will say to himself: "Yes, I am a member of the Iowa Retail Hardware Dealers' Association, and have agreed to buy of only such jobbers as are friendly to the association, but I am also in business in an individual way to make money. Why should I not buy of this man at his low price?" And the emissary of the unfriendly jobber says, "Whine not?" and talks business principles and policy in an entertaining way, and the dealer smiles and buys and lulls his uneasy conscience into a doze with the furtive jingle of hypothetical dollars saved by that low price. Yet the silver tongued emissary is busy all the while, "not letting his right hand know what his left hand doeth."

PLEASANT BUT DEADLY MEDICINE.

Do you not think that dealer was sick? Some will think he has been sick for a very long time—very sick. So he is caught with the pleasant medicine and continues to dope and smile, and his smile grows thinner and more wan as the Racket store man next door, who also buys of this unfriendly jobber and uses his methods, draws the sustaining elements of his business from this tainted source. The Racket man has nothing to lose and much to gain by crooked methods in selling Hardware. What is "meat" to him is poison to the legitimate dealer. So the dealer dopes and his smile grows thinner, until one day, when the face of nature seems to have painted the damask rose on each of her cheeks with pigment out of a box bearing a French label (so lavish is she), and the Racket man is out in front of his web drinking in ozone with his thumbs in the arm holes of his prosperous vest, you, the honest, smart, inconsistent Hardware dealer, are on your commercial bed. You are still smiling—but such a smile! The sheriff puts on his peculiar kind of crape and writes on your door, "*requiescat in pace.*"

No, gentlemen, I do not know how to make you patronize such jobbers as are friendly to our association, but I think you see some of the reasons why you should.

THE ASSOCIATION IF NATIONALIZED

can do for you what you cannot do for yourselves. It

can make all jobbers friendly, or feed them a medicine similar to the one the man took. I think you should look to this latter method for permanent relief.

Another paper on the same subject was prepared by C. W. Brelsford, Villisca. It is as follows:

Mr. Brelsford's Paper.

When our committee did me the honor of requesting of me a paper to be read before this convention and named as my subject "What Plan Can We Adopt to Persuade Dealers to Patronize Only Such Jobbers as are Friendly to This Association?" I felt that the compliment demanded my acceptance, yet I must confess that when I first looked over the subject from which I was to write, I felt myself insufficiently informed to profitably spend ten or even five minutes upon this topic; but as I got deeper into it I discovered it to be a subject of very great magnitude, of almost limitless importance, not only to us as retailers but to the jobbing trade as well, so if my paper should extend over the limit set by your committee I would consider it a favor if our secretary would call my attention to the fact at the proper time.

There are at the present time a large number of jobbers who are trying to act in accordance with the wishes of our State association by refusing to sell racket, department stores, &c., and confining the trade to its natural and legitimate channels. Those jobbers are our friends and should be assured of the hearty co operation and support of every member of this association, but those who pass us by in our infancy must eventually cease their method of doing business or lose the better part of their trade. "A word to the wise is sufficient."

WHO ARE OUR FRIENDS?

The resolution recently adopted by the Iowa Hardware Jobbers' Association I consider an excellent showing of the friendly feeling toward our association, and we certainly owe this association much for the stand they have taken, "that all inquiries from racket, department stores, &c., be referred to the regular Hardware merchant, or quotations upon such inquiries be made only upon the full knowledge and consent of such retail dealer." But you will say, "Who are our friends?" This inquiry is worthy of considerable time and thought. Because a traveling salesman gets up in our convention and makes a claim of great loyalty to this association, on the part of his house, we need not be satisfied with this assurance alone, but should have a committee for this particular work, which could ascertain the facts and report to the members. This would be more reliable than all other sources noted.

A SUGGESTION.

The success of this association is largely dependent upon the interest manifested and assistance rendered by each individual member. Therefore I would suggest that each member consider himself a committee of one to notice any or all shipments of Hardware coming into his place billed to racket or department stores or to any dealer of this description, make note of shipper's name, date of arrival of goods, &c., and report same to our secretary, who should take the matter up immediately with said jobbing house and obtain a full report, if possible, from them, place same on file, and, when another report of same character comes in regard to same house, call their attention to this as well as former complaints and let this serve as a caution to them in regard to such sales.

THE JOBBERS WOULD SOON REALIZE

we were awake and watching them, and I think it would take but a very few suggestive hints before they would do considerable thinking along this line.

Again, it would not be a bad idea and a perfectly legitimate one for each member to notice salesman calling upon such dealers and make a report of same to secretary something like this: "Mr. Jones, representing the Chicago Hardware & Tinware Company, called on Mr. Smith, one of Des Moines' leading racket store men, one day last week and sold him a large bill of goods." The secretary could obtain several items of interest of this

kind for our trade journals each week, which I think might be quite interesting to the jobbers concerned.

SELLING HARDWARE AS AN ADVERTISEMENT.

We all know that the racket and department stores sell their Shelf Hardware at a very small profit or no profit at all, largely as a means of advertisement. Why should the jobbers continue to furnish advertising matter to the racket stores at the expense of the retail Hardware merchant?

DOUBLE DEALING JOBBERS.

Again, we can all call to mind instances of jobbing houses having one or more salesmen calling on the same territory, one visiting the regular trade while the other calls upon outside firms, and again other jobbers send their salesmen to us as legitimate dealers and at the same time mail trade circulars, catalogues, &c., to outside firms. Such jobbers are not worthy of the patronage of any Hardware merchant and we should refuse to purchase of such firms.

DEALING WITH A DRUGGIST.

In that connection I call to mind an instance of only a few days ago. While visiting with a local druggist I noticed a large catalogue of one of our best known jobbing houses on his counter. In talking with this gentleman he said they had never failed to fill any order for any class of Hardware he had sent them, and that while building, a year or so since, he had ordered all of his Finishing Hardware from them. This same jobbing house handle Lamps, &c., very extensively, and the druggist got on their mailing list in this way, but it looks suspicious for the Hardware merchant to see a large Hardware catalogue in their hands.

Now it seems to me that a house of this description should have catalogues of distinct lines of goods and mail catalogues of the lines of goods only that the retailer handles. This method of promiscuously sending out trade catalogues and prices should be stopped.

ENROLLING TRAVELERS.

But again referring to my subject. We should enroll every traveling Hardware salesman in the State as a member. He should then familiarize himself with the objects of our association, and I think could and would do the association a great amount of good with his house. A large percentage of the selling to outside houses is due to the traveling salesman, who sells to these dealers without realizing what an injury he is doing the legitimate trade. I believe were they well acquainted with our aims this would be considerably reduced.

OBTAINING GOODS.

Can we obtain what goods are necessary from jobbers friendly to our association? Certainly we can. If, say, 10 or even 20 per cent. of the jobbers cater to and supply racket, department stores, &c., let them do so; we have a sufficient number left in the other 80 or 90 per cent. We cannot, however, improve the friendly feeling of the other 80 or 90 per cent. by periodically buying from the other 10 or 20 per cent. Let them alone. The salesmen and jobbers will soon discover whether the members of this association are standing loyally by those who are our friends.

Let all members then, whatever else we do, go home with the firm resolution—Buy only of such jobbers as we know to be loyal to this our association. And when we do this, and then only, can we look for better conditions for the legitimate Hardware merchant.

Co-operative Buying.

The subject of Co-operative Buying was discussed by S. R. Miles of the Miles Hardware Company, Mason City, in the following paper:

This subject, notwithstanding its importance to nearly if not quite every Hardware dealer in this broad land of ours, has been given very little attention, or I dare say even little thought.

With your kind indulgence I will point out some of the reasons for this indifference. One of the reasons I

think is the altogether unnecessary jealousy and rivalry existing between Hardware dealers in the same and adjoining towns, a condition of affairs for which we must find a remedy if we expect to accomplish anything in the way of co-operative buying, as a work of this kind can only be accomplished when the parties engaged have full confidence in each other's business ability and integrity. Now, gentlemen, do not get the idea that co-operative buying does not mean any effort on your part other than the mere placing of your order. It may be that the greater saving can be made by shipping. We will say that a car of Stoves, Coal Hods, Elbows, &c., has been shipped to your town for distribution, in the shipment of which you have joined three or four of your friends (by the way, is there not something more pleasing in the sound of the word "friends" than "competitors?"). The day of the arrival of this car may not be one on which you will need to wear your overcoat, and as you engage in the pleasant pastime of wrestling a few 500-pound Ranges with the beads of perspiration standing on your manly brow, you will probably resolve then and there that co-operative buying is a delusion and a snare. However, after the last shipment has been billed out, having regained by that time your natural physical and mental poise, having taken time to figure that your day's work has made you \$30 or \$40, which same amount may be the only thing that will keep you from wearing that last winter's suit another season, you will probably conclude that after all it is a good thing, and will be willing to repeat the performance again next year.

FIGURES WHICH SPEAK FOR THEMSELVES.

While my experience in co-operative buying has been somewhat limited, I will give you the results as nearly as possible. In making up my figures on carload shipments I have made use of the freight rates in effect during 1899 and the present minimum carload weights of 30,000 pounds. There were consigned to the Miles Hardware Company, at Mason City, for their own use, that of some of their friends at home and in adjoining towns, seven carloads of merchandise. The saving to the interested parties you will observe, as you follow the figures, was a nice sum. Of the seven cars three were Nails, Wire and Field Fencing, on which the local freight would have been 26 cents per hundred, or \$78 for 30,000 pounds. The carload rate was 13 cents per hundred, or \$39 per car, a saving on the three cars of \$117. On a car of Sheet Iron the rate was 30½ cents, as against 52 cents if shipped locally—a saving of \$64.50. On three cars of Stoves and Ranges the saving was still greater, the local freight from Chicago, St. Louis or Milwaukee to Mason City on Stoves as third class is 42 cents per hundred, or \$126 for 30,000 pounds. The carload rate at the same time was only 15½ cents per hundred, or \$46.50 per carload—a saving of \$79.50 each, or \$238.50 on the three carloads.

Summing up we find a total saving of \$420 on the seven carloads, or an average of \$60 per car or 20 cents per hundred pounds. Figuring 60 Ranges to a car you will make a saving of \$1.32½ per Range.

Now upon still further investigation I find the highest rate paid to any of the different towns to which a part of these goods were consigned was 15 cents per hundred. Add to this the difference between carload and less than carload prices and you will no doubt wonder why there were not more cars shipped in this same way. The only answer I can make to this is that the thing was new to all of us, but think I can safely say the results were so entirely satisfactory that we will not only continue in the good work, but gradually enlarge the list of goods to be thus purchased.

HOW TO SHIP.

If you wish to ship a car of Nails and Wire in conjunction with your neighbor in the adjoining town, consign the car to the furthest point. Instruct the railroad company to set it out at the station nearest that from

which it was shipped, for which you will have to pay \$5 switching charges; but you have still made a saving over local freight. Better still, ship with your neighbor at home and save the \$5 switching charges. But you say this is co-operative shipping and not co-operative buying. It is very true that the greater saving on cases cited was on the freight, but in the Wire and Nails you all understand there was a saving of 10 cents per hundred, this added to the saving in the freight makes the burden still easier to bear. But there is still one more point that must not be overlooked, and in my judgment a very important one, and that is the

SAVING ON YOUR INVESTMENT.

Have you ever tried buying mixed cars of Nails and Wire with your home competitor? How many times have you been unable to sleep nights for worrying about where the money was to come from to pay for that last car of Nails and Wire, the bulk of which you may not sell for six or eight months? You felt, when you gave the order, that the quantity was greater than you were justified in buying; but you must have the carload price and freight, which meant a saving of 20 to 25 cents per hundred.

Now the chances are that rascally competitor up the street was passing through the same ordeal; how much better for you both had you been on friendly terms, bought your car together, obtained the same price, the same freight rate, with half the money invested, and each would have paid for his share without laying awake nights and going down to the store the next morning with the determination to get all the cash business in sight at a probable sacrifice of your usually none too large profits, thus widening the already too wide breach between yourself and your competitor. If you are on friendly enough terms to buy goods with your competitors the same conditions will enable you to regulate the selling price.

AVOID SPECULATIVE BUYING.

One thing I think necessary to guard against in co-operative buying will be any tendency toward speculative buying. Don't think that, because you are saving a little money in this way, you can afford to anticipate your wants considerably in advance of what you would ordinarily do. Speculative buying is a thing to be avoided by the average Hardware dealer. I am not prepared to suggest any plan by which I think co-operative buying can be put into general use by the members of this association, but think this can be safely left to the good judgment of the individual members.

ANOTHER TRIAL.

I do not know that I have suggested anything new or that has not been at some time or another tried by a large number of those present, but of this I am quite sure, that if you were not satisfied with the results you did not get hold of the question at the right end, and I suggest that you give it another trial.

I do not think there has ever been a time in the history of the Hardware trade when the co-operation among the retail dealers was of such vital importance as at the present time. With the jobbers organizing on the one hand and the manufacturers on the other, it certainly behooves to meet organization with organization.

Window Advertising

was the subject of a paper by C. M. Dorse, Algona, which is as follows:

Every merchant's front window is a free advertising medium. It always occupies a preferred position. The public is constantly brought in contact with it, for it is continually staring the public in the face. The merchant is obliged to have the light, so as an advertising medium it costs nothing but a little time and thought, and it brings greater returns for the investment than any other method of advertising. No merchant, however strongly he may insist that he does not believe in advertising, but what is contradicted by his front windows. The mere

fact that he has placed in his window different articles which he has for sale, designed to attract the attention of the passersby, shows that he believes in advertising, although his window may not advertise.

STORE CHARACTER JUDGED FROM WINDOW.

The one purpose of any kind of advertising is to sell goods, and the wise merchant keeps this fact in mind when he makes a window display. The stranger, whom you wish to become your business acquaintance, judges largely of the character of your store from the impression made upon him through your front windows. If this impression is pleasing, he will remember your store when in need of anything in your line, and particularly anything he has seen displayed in your window. If, then, the show window is an advertising medium, which it is, and the purpose of all advertising is to sell goods, which it is, we come to the practical question of how to make window advertising sell goods.

In the first place, the front windows

SHOULD BE KEPT CLEAN.

The merchant is careful to greet his customers every day with a clean face; why should he not do likewise with clean windows? Dirt in either case leaves the same impression.

If you wish your goods to be seen from the outside, you must make it possible for people to see through your windows.

IN ARRANGING A WINDOW

the best results are secured by exhibiting one thing at a time, or several articles of the same kind or class of goods.

When a single article is brought to one's attention, the eye can catch it quickly, and the memory will retain it where it would become confused were several articles entirely different to be shown together, and the effect would be largely diminished. The nearer the merchant can keep to the idea of oneness in window displays the more satisfactory will be this source of advertising. If any merchant wishes to verify this proposition let him purchase a dozen Granite Wash Basins, or anything else that is commonly used (I merely suggest Wash Basins by way of illustration); arrange them upon a clean contrasting background of cloth or paper, place a card in a conspicuous spot, naming a reasonable price, for one week, and I assure him that he will reorder the same goods from the first salesman that comes along.

CONGLOMERATION OF GOODS.

But fully 75 per cent. of all merchants (including Hardware merchants) follow just the opposite plan, and convert their front windows into a sort of sampling place, where are collected a conglomeration of nearly every kind of goods carried in stock, without regard to order or fitness, and there it remains until it is almost lost to sight under the dust that accumulates upon it.

In visiting a Hardware store in a neighboring town a few days ago I counted no less than 30 different kinds of goods represented in one small window, and the only reason there were not 60 was the lack of room. It looked as if the merchant had placed here a sample of everything he had in his store, and in some instances the entire stock of some articles. You might as well have asked a person to tell the colors he saw in a revolving kaleidoscope as to tell what goods were displayed in this window. The window, as a means of advertising, was practically a failure.

NATURALNESS.

If you wish to exhibit a Steel Range, have nothing else in the window to divert the attention from this particular object; to give naturalness to it place a Tea Kettle or a few other pieces of Stove furniture upon it, while a Pan of nicely browned biscuits drawn half way out of the oven would cause many people to stop and look who otherwise might give it no attention. Place a card by it, stating that "with one of our Ranges your biscuits will look as nice," or anything else appropriate. If it is a hard coal stove, carpet your display floor, put down a sample of your Oil Cloth Matting and a Zinc Board; set

up the Stove, using your best Russia Pipe, and place a candle or lamp inside at night to give the appearance of fire; then if you wish to have about six people looking at it where you had one before, make up a dummy sitting in a rocking chair with her stocking feet upon the foot rest, with a card reading, "Her feet are always warm at night."

HOW TO DISPLAY WRINGERS.

A Clothes Wringer will not make a very artistic exhibit, but it can be made an attractive one. Place one of your packing boxes in your window, upon which put a Tub, to which attach a Wringer. Borrow from your grocery merchant one of his life sized dummies (showing a woman washing with a certain kind of soap), place this behind the Tub with a real Washboard in front of the woman; place a pile of dirty clothes on the floor, with a garment going through the Wringer on its way into a basket, with a card bearing the announcement, "This Wringer wrings dry, price only \$3," and you will sell Wringers.

NICKEL GOODS

always make an attractive window, whether shown as a class or as individual articles, upon black cloth, with black background; nothing else should go in with them, and a card should be conspicuous stating that "they are solid copper and will never rust," or something else as suggestive. Add a price to your card when practicable.

One effective way of arranging nickel goods is to place a few small boxes irregularly in the window, not so many that they will seem crowded; cover these over with black calico, which can be purchased for a few cents; let the cloth drop loosely between the boxes, covering the entire display floor, then place a single article, a Tea Kettle or Coffee Pot, or whatever it may be, upon each box, and no more; stretch a black curtain behind, high enough to form a background, place a card where it can be read, and you will sell nickel goods to people who did not know before that you kept them. When the whole line of nickel goods is displayed, step shelves can be arranged, covered with contrasting cloth, and a row of similar articles placed on each shelf.

ANY DISPLAY IN MOTION

is attractive. People will look at an object in action that would not be noticed in a state of rest.

Place a common Churn in your window, and how many people would give it a passing notice. Give it a motive power, and they would go a block to see it. This idea will be left for the ingenious merchant to develop.

AN OCCASIONAL EXHIBIT WITHOUT ANY DISPLAY OF GOODS

will repay one for his efforts; something relating to some local event or circumstance, if not overdone, will interest the people. For illustration: If the farmers hold an institute in your town reproduce in miniature a farm scene: the barnyard with its buildings, sheds, straw and hay stacks and a few toy animals in different places, with the yard fenced. Cotton batting makes a good substitute for snow, and a little coal soot will make tracks for the barn and sheds in different directions, and along the road. A grove of willows could be used for a background with good effect. A window of this kind will keep people standing in front of it in zero weather. There are many things in a Hardware store that can be arranged into amusing and interesting exhibits, and anything that will make the people laugh without disgusting them advertises. The trade journals publish from time to time cuts of various creations, as turkeys, locomotives, Bicycles, boats, men, and many other things, constructed from articles taken from different parts of the store. People will always look at these and talk about them.

SUBJECT TO CHANGE WITHOUT NOTICE.

However attractive a display may be it should never be allowed to remain longer than one or two weeks without change, even if the same thing has to be arranged in a different way.

Window advertising, like newspaper advertising, to

bring the best results, should carry with it that phrase with which all Hardware merchants have become familiar the past year: "Subject to change without notice," and the retailer should be as alert in making these changes as the manufacturers have been in making theirs.

If Hardware merchants would give more attention to this free advertising medium, bring to the notice of the people the dozens of useful things they have for sale by an attractive window display, with an attractive price card where practicable, I doubt not but many orders for goods that are kept for sale in the local Hardware store would never go away to a catalogue house.

To make window advertising a success:

Keep the eyes of your store bright.

Hold to the idea of oneness in your display.

Make frequent changes.

Attach a price card when possible.

My Methods of Advertising

was the title of a paper prepared by E. A. Rea, Corydon. The paper is as follows:

The chairman of the Programme Committee wrote me some time ago asking me to prepare a paper on the above subject. I wrote him I would do so, but, after thinking about the matter, I concluded that if there was any one thing in my business experience in which I had no method it was in advertising. This brought the question up as to the meaning of the word, advertising, and, on looking up different definitions for it, I decided that "Making public what you wish others to know" was about the best definition that I could find. This means,

KEEP THE PUBLIC TALKING ABOUT YOU

and about what you are doing and what you have to sell. Ben Butler once said he would rather people would talk mean about him than say nothing about him, and sometimes I think the business man who goes along quietly in the even tenor of his way and says nothing himself and has no one else saying anything about him would better have somebody talking mean about him than saying nothing.

I have tried various means of publishing to the people with whom I wished to do business the fact that I had the goods they wanted in sufficient quantities to supply their needs and at prices at which they could afford to buy them. I think one of the best ways to reach the trade is by

PERSONAL LETTERS.

I have a list of all the farmers in my county, and some names in adjoining counties, not only including the land owners but the better class of renters also, and I mail to them, at least three times a year, a personal letter calling their particular attention to certain lines of seasonable goods, both in the Hardware and Implement lines, and if I have any special bargains to offer I mention them and quote prices on them.

CALENDARS.

In addition to this I have, for several years, sent out calendars the first of the year to my farmer customers, being careful to send nice ones that will keep during the year. I advertise quite largely, both by display advertisements and locals, in both the newspapers published in our town, and at some seasons of the year in other papers published in other towns in the county.

CHANGING ADVERTISEMENTS.

I aim to change my display advertisement at least once every two weeks and often every week. I think it is very important in advertising to be honest with your customers. Avoid the stereotype statements that you see in so many advertisements, "that our stock this spring is larger than ever before," "our prices are lower than ever," and a number of others of very similar character. I do not mean by this that in advertising a

person should not claim all the advantages they have, but, first, be sure that you have advantages.

SPECIAL PRICES.

If you know that you own a certain line of goods at a lower price than your competitors are paying for them, explain this to your customer and take all the credit for looking after his interest that you can, and, if you are advertising that you are making special prices or offering special bargains in any line of goods, be very sure that your prices are special and that the bargains you are offering are really better than your customer can get at other stores in your neighborhood.

THOROUGHLY HONEST.

I believe a man to be a good advertiser must, first, be a good buyer; second, he must be thoroughly honest with his trade. This naturally brings up the question of quality in goods that we handle. If you have a second-class article in stock that you have bought at a low figure, do not advertise it as a first-class article. In the Implement business especially stick to good reliable goods, manufactured by factories with standing reputation and capital, even if you cannot make as much profit on the sale of their goods at the time as you could on some outside brand. If you can get the people in your county to believe that a certain line of Plows, Cook Stoves or Wagons are the best goods of their kind made and thus build up a large trade on them, your business, to that manufacturer, is worth more and they can afford to give you lower prices than if you handle a half dozen different kinds of Implements or Stoves and try to tell the people that they are all equally good. There can only be one best thing. Satisfy yourself who makes that best thing in each line you handle, from a pocket knife up to a threshing machine, then go to work for that line and continue to handle it from year to year, as long as you are satisfied that it remains at the head. Ask a fair legitimate profit, and no more, on these lines, and then maintain your prices without regard to what competitors ask for similar goods.

MAKE GOOD TO YOUR CUSTOMERS

every statement and warrant made on your best lines, without regard to what it costs you. Meet competitors' prices and beat them on some other lines bought for that purpose, even if you lose money on these other lines. Keep posted on what your competitors are selling, and if they are getting more trade on any line than you are, find out the reason, then direct your advertising so as to change this state of affairs as soon as possible.

This is rather a rambling article on advertising and takes in a good many other things, but there is about as much method about it as there is about my advertising, and, as the chairman of your committee, from the subject he gave me, seems to have wanted personal experience rather than theory, the number of times that I have used the pronoun I ought to suit him. As I find at the last moment that I will be unable to attend the convention, I have mailed this little story about advertising to Mr. Miles, the chairman of the Programme Committee, and, if it is heard before your convention, and is not worthy of the hearing, the reflection will be on his judgment for allowing it to be heard, and not on me for keeping my promise.

With best wishes for the year 1900.

On the 31st ult. the W. M. Pattison Supply Company, Cleveland, Ohio, tendered their employees a theatre party and banquet. About 50 persons participated in the banquet and speeches were made by Messrs. Pattison, Smith and Jones, officers of the company. The menus were unique, the covers being of dressed leather belting, daintily embossed.

A. B. M. Walker has purchased an interest in the Hardware business of C. L. Fewell, Corsicana, Texas, and the style has become Fewell & Walker. The firm discount all bills.

Minnesota and Northwestern Retail Hardware Associations.

THE annual joint convention of the Minnesota Retail Hardware Association and the Northwestern Retail Hardware Association opened this (Wednesday) morning at Duluth with fine weather, although the temperature was below zero. Large numbers of representatives of manufacturers and jobbers are in attendance.

A meeting of the Executive Committee was held this morning, when all the preliminaries of the convention were arranged.

The convention is being held in the armory, and everything indicates a most successful gathering of Hardwaremen.

The following is a list of the members of the Minnesota Association:

List of Members.

- Atwater Hardware Company, Atwater.
 Arneson & Bang, East Grand Forks.
 Andrews & Hampson, Ada.
 H. O. Amundson, Clear Lake, South Dakota.
 P. M. Anderson, Sacred Heart.
 A. Almquist, Cokato.
 L. F. Albrecht, Glencoe.
 A. H. Abraham, Albany.
 H. O. Aamot, Hoffman.
 R. M. Addison & Son, Madison.
 A. E. Anderson, Rothsay.
 Albert Lea Hardware Company, Albert Lea.
 Bergen & Vanderslius, St. Cloud.
 Geo. P. Becker & Co., Harris.
 C. W. Bouck & Son, Royalton.
 Bishop & Anderson, Blue Earth City.
 Boyer & Peterson, Fountain.
 Baker & Hanson, Rochester.
 Sid B. Barteau, Zumbrota.
 L. Blakestad & Co., Blooming Prairie.
 Behnke & Oetting, St. James.
 Bratsch & Field, Renville.
 G. Boehme & Son, Minneapolis.
 A. E. Beadell, Lansing.
 J. W. Berg, Little Falls.
 Boucher & Gallagher, Waseca.
 J. Borgerding, Melrose.
 Brevig Bros., Starbuck.
 Burke Bros., Ellsworth.
 Bretzke & Hamilton, Blue Earth City.
 J. A. Bloom & Son, Chicago City.
 J. H. Burl, Annandale.
 Bradckhoff & Spickerman, Fergus Falls.
 Bird Island Hardware Company, Bird Island.
 Theo. Brockhoff, Deer Creek.
 Bailey & Co., Janesville.
 Bondsens Bros., Evansville.
 J. E. Bergwell, North Branch.
 D. Y. Butler, Brownston.
 Crandall & Nelson, Owatonna.
 Cole & Darud, Belview.
 Claggett Bros., Montevideo.
 Ben Clayton, Taylor's Falls.
 H. S. Cleveland & Co., Minneapolis.
 T. H. Caley, Princeton.
 Cavanaugh & Fink, Faribault.
 C. H. Casey, Jordan.
 J. R. S. Cosgrove, Le Sueur.
 P. Clark, Ortonville.
 Christensen & Hauge, Elbow Lake.
 Cowing, Roberts & Cowing, Alexandria.
 Clara City Lumber Company, Clara City.
 A. M. Clark & Son, Lambertson.
 Clark & McConnell, Alden.
 Carufel & Hatch, Faribault.
 W. Dixon & Son, Kimball Prairie.
 J. J. Danek, Silver Lake.
 Davis & Co., Lake Crystal.
 F. E. Dimmick, North Branch.
 Deppe Bros., St. Paul.
 E. H. Dunton, Annandale.
 Devery & Donohue, Faribault.
 Evenson Bros., St. Peter.
 Erickson & Hellekson, Wheaton.
 H. C. Estby, Cyrus.
 Erickson & Vannet, Fertile.
 F. Ebert & Son, Alden.
 Englund & Ness, Starbuck.
 Erickson & Lawson, Murdock.
 Andrew Eloffson, Grove City.
 Ole Fjelstad, Lake Benton.
 John Funk, Carver.
 Fuller & Denning, Park Rapids.
 R. R. Forward & Co., Duluth.
 Wm. Frost, Pipestone.
 J. N. Feyder, Osceola, Wis.
 Peter Faber, Minneapolis.
 B. Feitsam, Royalton.
 Jacob Feiden, Torah Post Office.
 A. W. Ferrin, Rushmore.
 E. M. Fairfield, Osakis.
 M. Frankoviz, Fergus Falls.
 Garmon & Krautkremer, Montgomery.
 Gunderson & Son, Kenyon.
 Chas. Grill, Sherburne.
 Wm. Gile, Lake Benton.
 Greenhagen Bros., St. Anthony Park.
 Louis Gewalt, Breckenridge.
 Gilbertson & Espesoth, Erskine.
 Gardner-Warner Hardware Company, Minneapolis.
 W. B. Gillespie & Son, Jackson.
 Goodman & Mahler, Waseca.
 William Gier, Ortonville.
 C. M. Groschen, St. Bonifacius.
 M. D. Gates, Windom.
 E. J. Gellenbeck, Shakopee.
 Homme & Stage, Echo.
 W. J. Heaney, Olivia.
 Frank E. Hunt, Red Lake Falls.
 H. Horde, Kensington.
 Hagstrom, Lysen & Co., Lowry.
 J. G. Hoffken, Green Isle.
 W. G. Hopps, Rush City.
 How Bros. & Co., Sauk Center.
 Mat Honer, New Market.
 Heins & Co., Renville.
 C. H. Hornburg, New Ulm.
 E. C. Hamlin & Co., Lake Crystal.
 August Hartell, Norwood.
 John Horneman, Young America.
 A. C. Hatch, Battle Lake.
 F. J. Harris, Spring Valley.
 Hausen & Reika, Fairfax.
 J. O. Hatting, Dalton.
 Gunther Hillerud, Sauk Center.
 Houghtaling & Coulh, Fairmont.
 P. Hannburg, Cokato.
 Hauser & Tester, Gibbon.
 Handy Bros., Long Prairie.
 Haas & Anderson, St. Paul.
 W. A. Hanna, Mapleton.
 Higley & Vlen, Lake Park.
 Hector Lumber & Supply Company, Hector.
 A. C. Howe, Glenwood.
 Hauser & Parsons, Franklin.
 Hertz Bros., St. Paul.
 J. F. Humiston, Heron Lake.
 R. D. Hill & Co., Odessa.
 Hillestad & Lake, Fosston.
 M. D. Hartnett, Graceville.
 Huntington Bros., Luverne.
 R. B. Hall, St. James.
 Eugene Heck, Watertown.
 Frank Hassler, Perham.
 Thos. Ingliss & Son, Hallock.
 Johnson & Johnson, Gibbon.
 C. E. Jensen, Nicollet.
 Christ Juni, Jordan.
 J. O. Jenkins, Maple Lake.
 Jackson & Bailey, Thief River Falls.
 Johnson & Peterson, Hector.
 A. E. Johnson, Hastings.
 Johnson & Oslander, Hallock.
 E. S. H. Johnson, Gaylord.
 Kelley Hardware Company, Duluth.
 Kinsella & Rockwell, Preston.
 Robert Klenm, Staples.
 M. J. Keenan, Blooming Prairie.
 Henry Klossner, Winthrop.
 Karl Bros., New Prague.
 F. Kloepping & Co., Farmington.
 P. H. Klefer, Barnesville.
 Kraker & Bohmer, Melrose.
 Kintzi Bros., Butterfield.
 C. R. Klinkenberg, Lester Prairie.
 K. Knudson, Rothsay.
 C. E. Krause, New London.
 Keef & Heins, Morton.
 J. E. Kaiser & Co., Winona.
 Koenig & Casey, Howard Lake.
 Thoe. Lystad, Ada.
 L. N. Larson, Atwater.
 C. F. Ladner, St. Cloud.
 T. H. Lees & Co., Two Harbors.

Lepper & Bauer, Fergus Falls.
 W. A. Lindeman, North Redwood.
 N. A. Lilyquist, Winthrop.
 Leroy & Mason, Alexandria.
 T. J. Lee, Cylon, Wis.
 W. A. Linquist, Dassel.
 E. H. Loyhed, Faribault.
 Larson & Begquist, Winthrop.
 A. N. Lewis, Willmar.
 Laus & Duels, Long Prairie.
 G. S. Lander, Shakopee.
 J. A. Lewis & Son, Mankato.
 Geo. H. Lemon, White Bear.
 Lindquist & Linderholm, Belgrade.
 Lee & Crooks, Benson.
 C. M. Lund, Dawson.
 C. H. Mueller, Arlington.
 Joseph Mason, St. Peter.
 A. Marckel, Perham.
 Miller & Marti, Morgan.
 Morrisee, Weigler & Alton, Alexandria.
 Maurin Bros., Elizabeth.
 W. G. Mix, Nausau.
 Moorhead Hardware Company, Moorhead.
 Fritz Moy, Winsted.
 H. A. Myron, Glenwood.
 R. L. Macklenberg, Echo.
 M. A. Murphy, Benson.
 C. McNicol, Wood Lake.
 P. J. McGuire, Graceville.
 McNulty, Van Custer & Helgeson, Litchfield.
 L. F. McGray, Villard.
 E. Morton, Blooming Prairie.
 Muzzy & Ryan, Wadena.
 M. H. Muiers, Chaska.
 John McMullen, Shakopee.
 G. Nachbar & Son, New Prague.
 Nicolas, Hornburg & Liefer, Fairfax.
 P. L. Norman, Montevideo.
 Northern Hardware Company, Duluth.
 Jos. Neubeiser, Belle Plaine.
 Peter Nelson, Red Wing.
 Nyhus & Berg, Vining.
 Nutter Bros., St. Peter.
 Wm. Noonan, Adams.
 Osterman & Moody, Buffalo.
 Ostby & Distad, Puby.
 Ormseth & Belgum, Farwell.
 Christ Olson, Clarkfield.
 J. E. O'Brien & Co., Crookston.
 O'Brien Bros., Red Lake Falls.
 O. F. Olson, Brownston.
 H. H. Oustad & Co., Dawson.
 Ofenloch & Buell, Kasota.
 Olson & Holten, Argyle.
 Rasmus Oen, Thief River Falls.
 Osberg, Selvig & Co., Wilmar.
 Olson & Iverslie, Belgrade.
 Ostby & Johnson, Shelby.
 Olson & Peterson, Benson.
 Pladsen & Milsten, Garry.
 Peterson & Smith, Montevideo.
 G. D. Parmele, Rochester.
 M. J. Peters, Mantorville.
 Parrott & Smith, Owatonna.
 Peterson & Berg, Madison.
 C. L. Parkin, Goodhue.
 Powell & Wakeman, St. Cloud.
 O. F. Peters, Cannon Falls.
 Poss & Freeman, Franklin.
 G. A. Paulson, Henning.
 Princeton Hardware Company, Princeton.
 F. R. Paterson, Worthington.
 A. Prieck, Slayton.
 W. J. & H. D. Powers, Grand Rapids.
 A. K. Peterson, Appleton.
 Post & Eken, Henning.
 Potrattz Bros., Belview.
 Peterson & Myran.
 C. S. Pierce, Duluth.
 J. O. Peterson, Canby.
 Poss & Gleason, Sauborn.
 P. P. Quist & Co., Winthrop.
 Rushfeldt, Southworth & Co., Hawley.
 Rusk & Lorsche, Hendrum.
 Ross & Benson, Clinton.
 Ranstad & Hanson, Battle Creek.
 Jno. A. Roell, Northfield.
 F. H. Retzluff, New Ulm.
 Russell Bros., Stephen.
 O. C. Rian, Elizabeth.
 Rader Bros., Heron Lake.
 Rowland & Reese, Lake Crystal.
 Rapp & Post, St. Hilaire.
 Roll & Sands, Adrian.
 Revort & Holmes, Austin.

Reese & Murray, Waterville.
 K. Record, Farmington.
 T. B. Rader & Co., Delano.
 Otto Rood, Minneapolis.
 H. O. Roberts, Minneapolis.
 J. S. Ryff, Paynesville.
 K. H. Robbin, Clitherall.
 Stevens & Johnson, Hanley Falls.
 Scott & Beal, Lakefield.
 Schwirtz & Marsch, Wabasha.
 H. E. Swenson, Canby.
 St. Paul Hardware Company, St. Paul.
 Schroeder & Murphy, Mankato.
 Stebbins & Co., Rochester.
 J. N. Silver, Clarkfield.
 Stronks & Lapage, Baldwin, Wis.
 Julius Schmidt, Wabasha.
 Simms & Sawyer, Minneapolis.
 Herman Stege, Nicollet.
 Smith & Trahms, Minnesota Lake.
 Severens & Severens, West Concord.
 Schleck Bros., St. Paul.
 Schleck & Co., North St. Paul.
 Schroeder Bros., St. Paul.
 Simmer & Marzolf, St. Paul.
 J. H. Smith, Minneapolis.
 Schmidt & Lehoer, Springfield.
 Geo. Stoppel, Red Wing.
 Sullerud Bros., Halsted.
 Swanson & Anderson, Audubon.
 Stremmel Bros., Minneapolis.
 Slipp Bros., Brainerd.
 Smith & Visselmen, Fairmont.
 Schmahl & Jachming, Redwood Falls.
 J. M. Sprague, Mapleton.
 C. A. Stolzman, Montrose.
 C. G. Thysell, Hawley.
 D. R. Thompson, Rockford.
 W. C. Thompson, Hazel Run.
 Thorsen & Larsen, Spicer.
 W. H. Tomlinson, Le Sueur.
 Telford Bros., Danvers.
 Thompson & Busterud, Crookston.
 Tombler & Stewart, Wyoming.
 Frank Thiry, Minneapolis.
 Thompson & Habberstad, Lanesboro.
 Nic. Thomes, Arlington.
 Fred C. Thompson, Redwood Falls.
 Thos. F. Vanesek, New Prague.
 Veltuem & Clark, St. James.
 J. F. Vanesek, Montgomery.
 W. H. Vallbrecht, Hanover.
 J. P. Watson, Marshall.
 Woehler Bros., Minneapolis.
 Wieland & Wade, West Duluth.
 A. H. Wiegant, St. Hilaire.
 F. B. Volz & Co., Janesville.
 C. A. Victor, Lindstrom.
 A. C. Vaughn, Minneapolis.
 Wright & Anderson, Mantorville.
 Watschke & Hansing, Morton.
 H. Wadsworth & Co., Glencoe.
 J. A. Wedum & Co., Kensington.
 R. L. Warner, Eden Valley.
 Clem M. Wall, Faribault.
 Henry J. Wartman, Watkins.
 L. A. Williams, Pelican Rapids.
 Jacob Wilson, Selly.
 S. A. Youngberg, Hancock.
 C. A. Zabil, Blue Earth City.
 Zeb Zimmerman, Mankato.

Opening of the Convention.

The convention was called to order at 2 o'clock, and after the usual routine work James E. O'Brien of Crookston, Minn., read the following presidential address:

Mr. O'Brien's Address.

The year just past has been an eventful one in the annals of business. I believe there has not been a time in the commercial experience of any of my hearers when there has been so marked a tendency toward an advancing market on all materials and manufactured articles that are embraced in the business we represent.

How many of us have taken advantage of this remunerative period that comes so seldom in man's business experience?

How many have allowed this golden opportunity to dwindle and pass away, the loss of which will not be apparent until we are called upon to deal with the reverses that men engaged in mercantile pursuits have to meet during periods of depression?

Business has its ups and downs, and with the same care with which we steer our ship of trade clear of the breakers in times of distress we should pilot it into ports of profit during intervals of commercial activity.

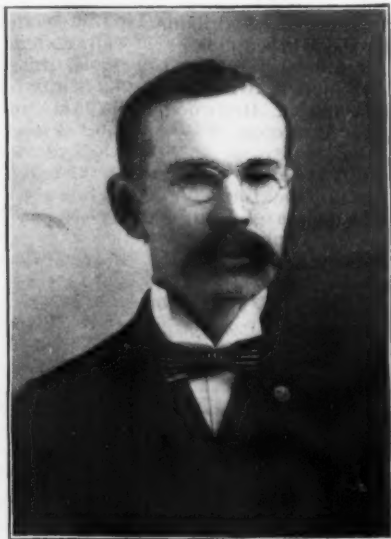
With these few remarks concerning trade in a general way, I will endeavor to deal with the subject that most interests you at this time.

OUR STATE ORGANIZATION.

One year ago to-day you honored me with the highest office in your gift. At that time it was not my desire to assume the responsibilities connected with so important a trust, but rather than have the impression go out that I would shrink from a duty to the cause it has been my pleasure to advocate, I yielded to your declared will.

During my term of office I have endeavored to deal with all men with fairness and impartiality; the conclusions that I reached were reached with consultation and with care, and when once formed they were firm in purpose, especially so when to waver meant a surrender of the principles that underlie our organization.

Among other duties that I was expected to carry out



JAMES E. O'BRIEN, President

during my term of office was the appointment of a committee on

MUTUAL FIRE INSURANCE,

which committee was to report at this meeting with recommendations. After the adjournment of our last convention I set out to investigate this subject of mutual fire insurance as conducted by organizations similar to ours, and I soon became impressed with the desirability of having your committee report a fact, instead of a recommendation, at this meeting, and this, it is my pleasure to announce, they are prepared to do.

My desire for the speedy formation of the insurance feature of our organization was not based entirely on my wish to obtain cheaper insurance for the firm that I represent—it was more especially directed in favor of the dealer who must see the dollar roll his way and remain with him to be identified as the wages of membership in a cause that in itself should furnish sufficient inspiration to attract his aid; however, before he can enjoy that pleasant experience he will be expected to become one of us, and be loyal to the principles we represent and assist in having numerous other dollars roll his way that do not carry with them the clear mark of identification from whence they came.

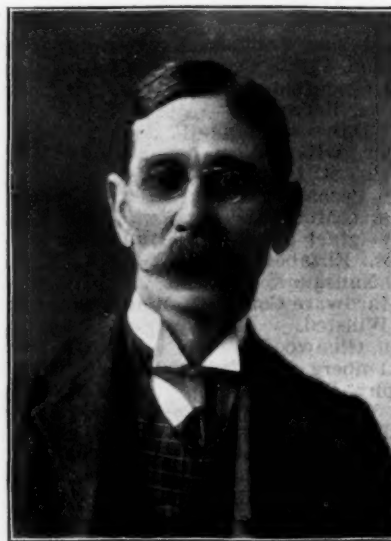
THE LIST OF OBJECTIONABLE DEALERS,

numbering 150, that are doing business in this State has been prepared by your committee in accordance with your instructions. It has received the indorsement of every Hardware jobbing house doing business in this

State with but one exception, and we have every reason for believing that that firm will be loyal to our wish.

Your Executive Committee has met three times during its term of office, and I have called at headquarters four times in addition to the regular meetings of your committee.

We have adjusted all complaints from our State sent



THOMAS McCracken, Secretary-Treasurer.

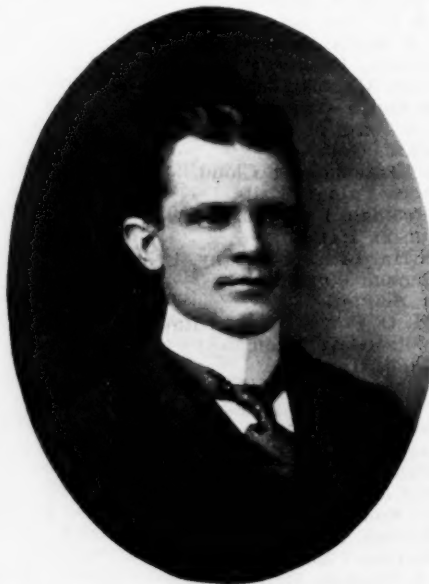
In (19 in all) satisfactorily to the members of the association, and enrolled 54 new members, with every indication confronting us that our march to success will continue.

Much of the data in connection with the year's work are not obtainable owing to the loose method prevailing in the secretary's office during the early part of my term; at this time it affords me pleasure to commend the work of our present secretary, so courteously, successfully and diligently performed. He is especially qualified for the position he occupies, and deserves liberal treatment by this convention and the Executive Committee it will select for the ensuing year.

It is my opinion that your

EXECUTIVE COMMITTEE

should be selected from the Board of Directors of your



GEO. W. WELLES, Of Executive Committee.

mutual fire insurance association, for I can see no reason for having two sets of officers.

I desire to adjure you that it is only with extreme loyalty to our resolutions and the constant use of the pink

book, rather than acceptance of the malicious representations of the representatives of firms that are not friendly to us, that we can hope for the success of our cause.

I have expressed myself to presidents of other State associations as not favoring at this time the formation of a

NATIONAL ASSOCIATION

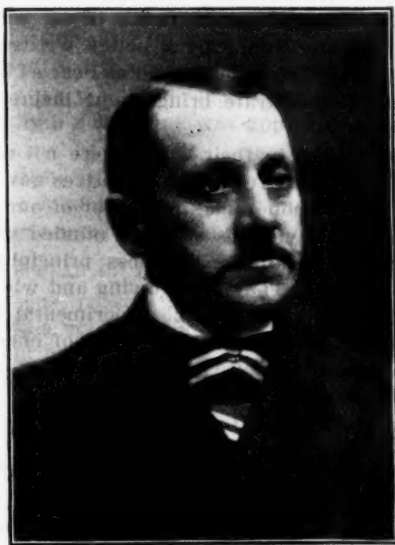
of retail Hardwaremen, giving as my reason that we should have a sufficient number of State organizations thoroughly organized to make it national in character as well as name; I believe if we form an organization it should represent all that the name implies.

The organization of States now having local associations into a

SECTIONAL ASSOCIATION

and called by the proper name representing strength, instead of weakness, in the territory it embraced, would, I think, best serve the present needs of those that participated in its formation.

In conclusion I wish to express my sincere thanks to



H. B. GARDNER, Of Executive Committee

my associates on the Executive Committee, for the courteous treatment I have received from them as their presiding officer, and congratulate our members on the wisdom displayed in giving the affairs of the organization to their care and keeping.

It has been my earnest wish to serve you to the best of my ability. To that end I have given my best energies. I now return to you the trust given to my care one year ago, feeling that my efforts have not been spent in vain.

Secretary McCracken's Report.

The following was the report of Thomas McCracken, the secretary-treasurer:

To the Minnesota and Northwestern Retail Hardware Dealers in Convention Assembled:

Less than six months ago it was my privilege to become associated with you as your secretary, and I herewith present to you an account of my stewardship for and during the time mentioned.

PRESENT MEMBERSHIP.

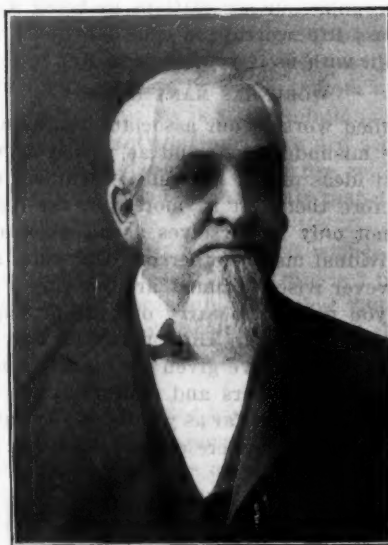
Our present membership numbers 384, which gives us a net gain of 54 members during the year. This should be encouraging to us as it evidences a healthy growth, showing that the seed has been sown in fertile soil, and will, I trust, return to us an hundredfold at this annual meeting.

Our membership in the State of Wisconsin is 268, in North Dakota 110, making a total membership of 762 in States comprising our Northwestern Association.

The work of our State association, as well as of Wis-

consin and North Dakota, has been of educational benefit, resulting in the growth and dissemination of the principles underlying our organizations.

We now have the co-operative support of nearly all Northwestern jobbers visiting the trade covered by our



JOS. MASON, Of Executive Committee

association work, and also the names of over 600 manufacturers from all over the country who are united with us. It only remains for each individual member to be loyal to himself and his obligations during the coming year to witness a stampede coming our way of the remaining "almost persuaded ones."

During our term of office we have received and answered over 1100 communications; mailed and addressed over 1900 letters and circulars; tabulated and distributed to jobbers and manufacturers the names of over 150 individual dealers and firms who are conducting their business in a manner detrimental to the interests of the retail dealer. We have received 19 complaints, coming to us from different members of our associations, and are pleased to inform you that every one has been satisfactorily adjusted, in full accord with the principles of our work.

In order that all may fully understand the nature of what we call a complaint, I submit you the following correspondence, with names of parties omitted.



J. R. S. COSGROVE, Of Executive Committee

This was, comparatively speaking, an easy one; we have others that have required over 20 letters before we have arrived at an adjustment satisfactory to our association.

I would right here like to ask all Hardwaremen present, whether members of our association or not, if this one case alone is not worth the price of admission? This correspondence, remember, was with one of the largest houses in their line visiting your territory. Did they not recognize our associations as being a factor in their business life worthy of consideration? Think it over and join with us if you think so.

WORK HAS MANY SIDES.

The detailed work of our association is many sided—liable to be misunderstood—and as varied as would be the different ideas of our individual members upon any question before them. It is, moreover, far reaching in its result, not only to ourselves as an association, but to each individual member thereof. Our rules and resolutions, however wisely framed, are but empty sounding phrases if you neglect to carry out the principles they stand for and represent. How many of our members during the year past have given the "glad hand" in all their purchases to jobbers and manufacturers who are working with us? In so far as you have, you have helped us and broadened our sphere of usefulness; in so far as



O. H. MYRON, Of Executive Committee.

you have not, you have worked against your own best interests.

OBJECT IS TO HELP MEMBERS.

The object of our association work is to help you. We cannot do so, however, unless you are willing to try and help yourself. We want every member to live up to the faith that is in him, and wherever he may be we want him firm of purpose.

You must remember that your officers and executive boards are simply servants in your hand, they but voice your sentiment and through you alone can they work out the duties intrusted to their care. Each individual member should realize that he is a responsible unit in the frame work of our association, and has at all times a bounden duty to perform which he cannot delegate to another and which he should not be willing to ignore. We want to increase our membership. Can you not help us by a little effort on your part in your own county? We would like to have each member agree to add one new name to our association list the coming year. We would then be able to issue bi-monthly reports to each member and furnish them with

AN ASSOCIATION BUTTON.

I do not think we can be too closely in touch with each other, nor can we expect very much enthusiasm among ourselves if we do not exchange the time of day oftener than once a year.

The annual meeting is most assuredly the place to take these and other matters pertaining to our association under advisement, if they merit consideration. This

is the place where your voice and vote can give them effect, where your counsel and earnest endeavor will count the most, and where you can understandingly assist in solving the many knotty problems presented to us.

INSURANCE BRANCH.

The branch of our association work known as the Retail Hardware Dealers' Mutual Fire Insurance Company has required continuous, constant and unremitting labor to place it upon a successful working basis. In this work we have had the assistance and support of our members, the counsel of our Insurance Board and of the Executive Committee; but to President A. C. Hatch, Battle Lake, Minn., of the insurance company, and President Jas. E. O'Brien, Crookston, Minn., of the Hardware Association, we are deeply indebted for their untiring devotion, their never faltering purpose in furthering, promoting and establishing our company.

POLICIES BEING WRITTEN.

We commenced writing policies upon January 4, 1900, and now most respectfully solicit the insurance of all our members. We have over 250 applications, aggregating \$500,000. This insurance feature of our work should enlist your earnest support. A policy written with us is absolutely safe and reliable, and as near as human experience can demonstrate brings your insurance down to actual cost.

Our associations in their origin were not accidental, nor have they sprung from selfish motives governed and controlled by the money making power of our land, but are the earnest convictions of broad minded men, based upon sound and enduring business principles. They have come to stay. They are growing and will continue to grow. They have passed the experimental stage and have come out into the bright sunlight of emancipation from the malign influence of department store tactics and catalogue houseisms.

They have set in motion a motive power which will have to be consulted and respected throughout the land.

They are the resultant effect of the best thought of men who will not be enslaved in their commercial life, nor will they consent to be driven out of business by illegitimate methods of combination or of competition.

TREND IS TOWARD CENTRALIZATION.

The trend of affairs to-day is largely toward centralization in all lines of manufacture and in the marketing of all products. Trusts are multiplying and absorbing the smaller plants, doing away so far as possible with competition, which is the very life of all trade. We should carefully consider how we can best check this growing tendency which is surely eliminating the cardinal principles of business usages accounted wholesome, equitable and just in all times past. The issue is fully upon us and must be met by unity of action along the line marked out by our own and similar associations throughout the country.

As we grow in numerical strength so will our influence broaden. Our association will become invaluable and profitable in proportion to the interest each member feels in its welfare and success. You can assist your secretary by offering suggestions and reporting all matters which should have his attention; he cannot be supposed to remedy evils and adjust differences of which he has not been informed.

To the officers and directors with whom we have labored we desire to return our sincere thanks for courtesies received. The harmony and good will existing between us have contributed largely toward furthering the object and principles of our association work.

We cordially invite all present to become active members with us.

CO-OPERATION.

Now is the time and this is the place to enroll your name with your brother Hardwaremen who have labored four years to bring about the beneficent result to which this annual meeting attests. You cannot afford to stand

idly by and accept gratuitously the labor of their hands without becoming an active colaborer with them.

In all that pertains to your business life we assist and strengthen you; through your own unaided efforts you would accomplish very little, but think what a power you become when speaking through your State association.

Gentlemen of the convention, it rests with you to say whether an onward and upward impetus shall be given to our work to-day. In your keeping lies the responsibility of our future progress. If your hearts are in the right place the annual meeting of the Hardware Dealers' Association for 1900 will be a century mark, emblazoning our pathway in the years to come. Duluth will not have been discovered in vain, and the voice of our deliberations, like the name and fame of our peerless sister city, will resound throughout the land.

Mutual Fire Insurance.

The following address on the subject of mutual fire insurance was made by A. C. Hatch of Battle Lake, president of the Retail Hardware Dealers' Mutual Fire Insurance Company:

One year ago at our annual meeting at St. Paul the subject of "Mutual Fire Insurance" was brought up. Little thought had been given this subject, and it was a difficult matter to raise even a discussion on that subject. Finally a committee was appointed to investigate the subject and to report at (this) our next annual meeting. The discussion at the meeting and the appointment of the committee created an interest in the matter of insurance among the members of our association.

THE PLAN OF THE LUMBERMEN'S MUTUAL

which had just passed through five years of successful business, was studied, and your committee decided to take action. The necessary legislation was secured, and in May the Minnesota Retail Hardware Dealers' Mutual Insurance Company was organized. July 1 we were prepared to take applications. Lack of efficient help and the necessary funds retarded the work. Unexpected obstacles were met and overcome. We were ready to do business in November, but as it would save us our '99 fees, we did not begin issuing policies until January. We now have applications and policies aggregating \$500,000.

GUARANTEE CONTRACT.

It is almost imperative that any mutual company starting in business, to avoid the disaster that a few total losses would cause, should carry a considerable reinsurance. This was found, owing to the many recently organized mutuals, to be impracticable. A meeting of the board was called, at which a guarantee contract was entered into by the members of the board and other members of the association, guaranteeing a fund of \$5000 to meet immediate losses. I am confident this will be more satisfactory than reinsurance. It certainly saves the expense of reinsurance, which would be considerable. Gentlemen, this is not a great showing, but I believe that we have laid firmly and deeply the

FOUNDATION OF AN INSTITUTION

which will connect the members of the association by firmer ties, and be a great aid to the association and a factor of economy. In our work of organization we have followed the plan outlined by the Lumbermen's Mutual as closely as possible. Their secretaries, Mr. Holles and Colonel Fahnstock, have always been ready and willing to aid us, and our association will always owe them a debt of gratitude.

I also wish to state that we are under great obligations to the line insurance companies. They have in the past, at a considerable expense to themselves, given every risk in the State its proper rating in regard to hazard. We appropriated this without their consent and without cost to ourselves. We hope they will excuse our transgression, as we needed it very much in our business.

THE PLAN.

Now a few words concerning our plan. I will try to make it as clear as possible, and will to the best of my ability answer any question you may desire to ask regarding it. We can, as in the case of the Lumbermen's, only solicit business in Minnesota. But we can receive business unsolicited from adjoining States, and we hope by the end of this year to be carrying nearly all the desirable Hardware dealers in North Dakota and Wisconsin. Our maximum policy is \$3000; minimum, \$500. Our safety lies in the fact that our risks are separate. We cannot suffer a great loss at a single fire, which gives us a great advantage over other mutuals that do a general business.

Our system is this: If a merchant wishes to take out \$3000 insurance, his present board rate is 1 per cent., he pays in his deposit premium, \$30; that \$30 belongs to him and at the end of the year is placed to his credit on reinsurance or returned to him, less his percentage for losses and expenses.

In case his rate is 2 per cent. his assessment or percentage for losses and expenses would be just double, and so on. Each one pays an assessment according to the hazard of his risk. Otherwise it would be unfair, and a nominal risk now rated at 1 per cent. would be paying the same for protection as an extra hazardous risk now rated at 4½.

Hardware stock and stores cannot be considered more hazardous than lumber yards, sheds and offices. Their average loss for the year just closed was \$1.90 per \$1000, which has been about the average for the past six years. If we are equally fortunate, and there is no reason why we should not be, the merchant who is rated at 1 per cent. will pay but a mere trifle for his protection.

TO CONVINCE YOU THAT OUR MUTUAL COMPANY WILL SAVE YOU MONEY

I will call your attention to this fact: The losses by fire of the retail Hardware dealers of the State did not aggregate \$2800 for the year 1899. The dealers, 1100 in number, are carrying at least \$3,000,000 at a rate ranging from 1 to 6 per cent. You can readily see that there is an opportunity to practice economy, and I hope that every dealer present not now on our books will before returning home consult our secretary and make arrangements for insurance.

Combination and Association.

The following paper was read by Edward A. Moyer of the Marshall-Wells Hardware Company, Duluth, on the subject of combination and association:

When future historians shall sum up the events of this century, in so far as they relate to this nation, they will all agree in one particular feature of it, that the watchword of the business world at its close was Combination and Association. Future generations, being in possession of the results obtained, will applaud the good or deprecate the evil resulting therefrom. Which will it be? Surely no one at present can have the temerity to predict.

Combination and Association both profess as a valid excuse for their existence the condition into which the business life of this country has been drifting, and both ostensibly seek to remedy existing evils in their own way. The future only will show if the correct remedy has been prescribed.

This paper being intended for this association, I shall not enter into a discussion of the combination feature, although the subject without doubt is one very much alive at this time, especially to the Hardware trade, for jobbers as well as retailers.

Your association, as I understand it, was called into existence for the very laudable purpose of endeavoring to correct some of the abuses which have gradually become a part of our business life, the correction of which would serve to ameliorate the condition of every retailer, whether a member of the association or not, and on this account

it assumes the position of fostering the interests of the entire retail trade.

From this standpoint, all the

GOOD RESULTS

obtained through your association benefit not only your association as a whole and its members individually, but the trade at large, and, carried out on these broad lines, will ultimately make your association a tower of strength.

On the other hand, the attempt to benefit individuals at the expense of the many will be a stumbling block in the way of your future growth, and your rule and guide should always be broad, liberal judgment, moderation and conservatism.

There should not be, and I can see no good reason for, any

ANTAGONISM BETWEEN THE JOBBER AND RETAILER,

or *vice versa*, for the prosperity of the one means the prosperity of the other. You cannot injure the one without affecting the other, and all differences should be open to frank discussion.

This may sound like treason to preach before a gathering of retailers, but my long connection with the retail trade warrants my assertion that you will find no better judgment or good sense in any other trade than is characteristic of the general retailer of Hardware.

I think I violate no confidence when I assert that the jobber is entirely in accord with you in your request that Hardware should be sold by the retailer of that commodity and that they are willing to give their aid in reaching that desirable end. How best to attain this is the matter to be determined and to be wisely discussed and to be enforced with the utmost prudence.

We are all more or less creatures of habit, and good habits as well as bad habits are not changed without effort, nor can you hope to at once divert trade which for some time has been flowing into other channels into what you deem the proper ones. It will be, as a matter of course, a slow process and much patience and good judgment are necessary as well as forbearance toward your neighbors.

In formulating your lists of such parties as you deem

UNFAVORABLE MEDIUMS FOR THE DISTRIBUTION OF HARDWARE,

and whom you ask the jobber and manufacturer to refrain from selling, be sure you err on the safe side, for the time being, rather than do injury to some of your business neighbors by placing them unjustly on this list. Let every member weigh well his action in reporting candidates for this list, and not allow business or local jealousies to warp his judgment.

Because a competitor is wide awake and by judicious, honest advertising is showing the public that he not only keeps Hardware but sells it, do not "sulk in your tent" and allow him to get all the "persimmons," but get out of your Rip Van Winkle habits and get after some yourself.

CULTIVATE A GOOD FEELING

with your competitor, talk over matters with him, but don't try to get even by reporting him as doing business in an unfair manner, for the chances are that you will find by becoming better acquainted with him that he is not nearly as black as you have painted him.

On the other hand, when you submit your lists to the jobber and manufacturer, and receive his assurance that you have his assistance and that he will refrain from selling unfavorable parties, don't form hasty opinions as to the integrity of the jobber and manufacturer or doubt his loyalty to your association if he does not at once sever relations which he may have had for a term of years with some of these firms. Investigation will, without doubt, show good reasons why too hasty action on his part would be financially injurious, and that it is wise to protect his own interests in preparing for a "parting of ways."

There is more or less human nature in all of us and we resent what may seem to us as

AN UNWARRANTED ACTION,

and this is all the more keen if it affects our purse. This request of a jobber or manufacturer may come at a time when it would be very impolitic from a financial standpoint to at once sever his business relations with his customer. He may have orders for future deliveries, a common occurrence, as you all thoroughly appreciate, and to annul such contracts would be extremely unwise and must react in many ways on any one who would attempt it, more particularly so when his customer knew the reason of such action.

These matters should be all carefully weighed before forming hasty opinions. I do not believe that jobbers or manufacturers when once agreeing to stand by your association are spending any of their time trying to circumvent such promises, and any deviation may be laid to unintentional blunders which are as annoying to them as they are to you. Your actions and policies since the formation of your association are, I believe, approved by those with whom you come in contact, and I trust will so continue.

Use the utmost care in selecting the

PILOT FOR YOUR SHIP

and you will continue to grow stronger, but never let your strength be an excuse for an unwarranted action, either against a competitor or a jobber.

Let your policies be broad and liberal, judge wisely, act with conservatism, then will future historians applaud your work and coming generations of Hardwaremen rise up and call you blessed.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

Salesmen's Advance Notices.

We are in receipt from a well-known knight of the grip of an inquiry in regard to desirable form of advance notice for use of salesmen. There is, as our readers are aware, a wide diversity of practice in this matter. In many cases postal cards are used or circulars, while in others personal letters are found to justify the trouble involved in sending them. We should be glad to have advices from traveling salesmen in regard to the methods which they use, and any suggestions in regard to how the matter looks from their standpoint. We should be pleased also to hear from merchants on the subject.

Relation of Salary to Sales.

An enterprising New England house are desirous of information as to the relation the amounts paid for salary should bear to the total sales in the retail Hardware trade. The term "salary" is intended to cover all sums paid employees from the heads of departments down. The views of the trade are invited.

Geo. Olney of Solomonville, Ariz., has purchased an interest in the Hardware business of Ijams Bros., Safford, and the style of the house has been changed to Olney Ijams Hardware Company. They handle a general line of Hardware at wholesale and retail.

Davis & Baker have succeeded Alexander & Davis in the retail Hardware, Stove and Sewing Machine business at Browning, Mo.

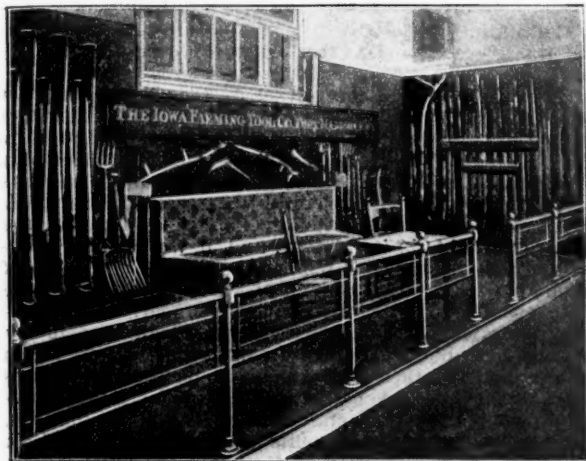
O'Connell Bros. have succeeded Wadden & O'Connell, dealers in Agricultural Implements, Ramona, S. Dak. They have recently taken possession of a new building.

Hardware Exhibits at the National Export Exposition.

(Concluded.)

The Iowa Farming Tool Company

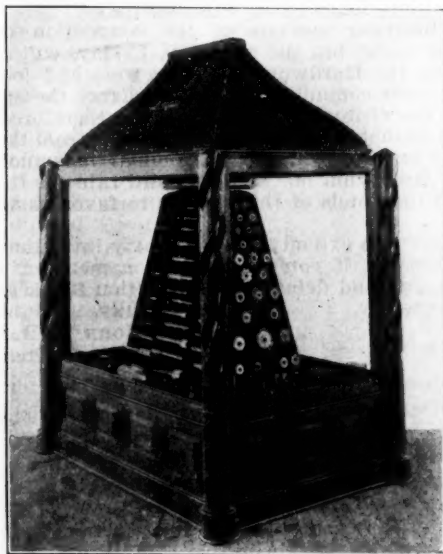
of Fort Madison, Iowa, made a fine showing with their productions. On a rich cloth background were displayed



in pleasing arrangement the different styles of Forks, Spades, Hoes, Scythes, Rakes, Corn Knives, Yokes and other Tools and accessories which they make. The space was liberal in proportions, and was separated from the aisle by a rich brass railing.

The Standard Tool Company,

Cleveland, Ohio, had a small but very interesting exhibit. It was inclosed within a richly carved cherry case with a canopy top, the corner posts being representations in cherry of immense Twist Drills. The case was square, with glass on all four sides. Inside was a form pyramidal in shape, covered with black velvet, on which was displayed a line of the company's productions. On one face of the pyramid and in front of it



were Drills of different sizes, with an arrangement of a number of small Drills in shield form. Another front of the case was used to show Cutters of various kinds. A third front was used largely for a display of Reamers, and the remaining front was devoted to Spring and Cotter Pins. The open space around the pyramid was spread with large Reamers, Drills of all kinds, Spanners, Mandrels, Chucks, Gauges and other Tools.

The Plume & Atwood Mfg. Company,

New York, made a very handsome exhibit, in which was shown a very limited part of their extensive line of Brass and Copper Goods. While they had a corner location the display was arranged to the best effect by

fronting in the main on one aisle. A tier of maroon colored shelving formed the background of the exhibit and provided the opportunity to display a large line of Lamps in brass, bronze, china and other mountings. At one corner was seen a handsome set of fire place furniture. In another corner was an oak tabouret used to carry a large nickel plated stand of Bicycle Lanterns made by the concern. Near the front was displayed a line of Banner Oil Heaters. Beyond, at the end of the space, was a column composed of sample boards covering Brass Drawer Fittings, Water Closet Butts, Brass Butts of all kinds, Brass Bedstead Fittings, Single and Double Brass Chain, Gong Bells, Rivets, Iron Chain, Plumbers' Links and Washers and Brass Checks. The exhibit was surrounded by a handsome brass railing.

The Stanley Rule and Level Company,

New Britain, Conn., had an exhibit which though small was quite representative of their line. Their display was contained within a neat square showcase of oak, mounted upon corner supports and having four glass fronts. The goods shown covered Levels, Squares, Spokeshaves, Plane Irons and a variety of Rules. The company were awarded a silver medal and diploma.

R. Heinisch's Sons Company,

Newark, N. J., had a large and handsome exhibit of their manufactures, including Tailors' Shears, Trimmers, Scissors, Tinnerns' Snips, &c. The company were awarded a medal and diploma.

American Saw Company,

Trenton, N. J., whose exhibit was illustrated in a former issue, were awarded a silver medal by the Franklin Institute.

Cut and Wire Nails.

THE question as to the relative qualities of Cut and Wire Nails has often been touched upon as of a good deal of practical interest to the trade. Our readers will be interested in the following remarks in regard to the subject, for which we are indebted to a correspondent in Pittsburgh:

Considerable correspondence has appeared in the press during the past year regarding the merits of Iron and Steel Cut Nails as compared with Wire Nails. An important feature which must not be overlooked in this discussion is that, denomination and weight being equal, the first named will resist corrosion twice as long as Steel Cut and three times as long as Wire Nails. This fact has been fully proven and published many times in the last 25 years.

Steel Cut Nails can be prepared to equal the Iron Cut in corrosion resisting quality at an additional cost of 5 cents (or less) per 100 pounds. A similar treatment of Wire Nails would not have an equally beneficial effect, owing to the trace of acid remaining after deoxidization. This, together with the carbon condition in the Wire, promotes the tendency to corrosion.

Government and private tests have proved that the adhesion (or holding power) of Iron and Steel Cut Nails is about 50 per cent. greater than that of Wire Nails. They have also another decided advantage in that, owing to their shape, they are less liable to bend under the impact of the Hammer.

The foregoing facts are well known to those having a comprehensive knowledge of the subject, and will not be disputed except by manufacturers or others having commercial interests at stake.

The reason that Wire Nails have to such an extent superseded the Cut variety is largely due to the opposition of the manufacturers to any improvement in their Cut Nail machines or the quality of goods placed in the market, which contained a considerable quantity of waste material, amounting in the United States alone a few years ago to more than 20,000 tons per annum, all of which could have been eliminated without cost; but the

manufacturers were unwilling to do this, it being much more profitable to sell the whole product as good Nails.

There is little or no waste with the Wire Nail, and there are a greater number of them per pound than of Cut Nails of the same denomination.

The construction of Cut Nail machines is more complex and about three years' time is necessary to attain the skill and manual dexterity to successfully operate them, while the ability to operate the Wire Nail machine can be acquired in about three weeks.

The latter style machines were introduced into the States by Michael Myers of Germany, and were, I believe, first put in operation about 1876 at the Wire works in Covington, Ky., and no improvement in arrangement or efficiency has since been made in them. In fact, the French pattern in common use for the past 50 years is simpler in construction and just as efficient as any of the so-called "improved" machines later produced. All the requisite movements are secured without rotating cams by a single throw on the power shaft.

The Iron Cut Nail originated in Birmingham, England, in 1726. The Steel Cut also originated in the same town in 1862, samples of which were exhibited at the Universal Exposition in London in that year. These are now at the Peel Park Museum in Salford, near Manchester.

Hardware Organizations.

Missouri Retail Stove and Hardware Dealers' Association.

The following is the official programme for the meeting of the Missouri Retail Stove and Hardware Dealers' Association at St. Louis, February 20-22:

Tuesday, February 20.

MORNING SESSION.

Meeting of Executive Committee.
Enrollment of members and payment of annual dues.

AFTERNOON SESSION.

Report of president.
Report of secretary.
Report of treasurer.
Election of officers.
Resolutions and amendments offered and referred to committees.
Paper, "Why Should Retail Dealers Belong to Our Association?" B. F. Naylor, Marshall.
Discussion of paper.
Paper, "The Outlook for the Success of the State Associations," Clark W. Kelley, president Northwestern Association, Devil's Lake, N. D.
Discussion of paper.
Adjournment.

Wednesday, February 21.

MORNING SESSION.

Paper, "Some Things to Be Avoided by This Association," J. F. Bannon, St. Louis.
Discussion of paper.
Reports of committees.
Paper, "The Protection of the Retailers' Trade," M. C. Post, Brookfield.
Discussion of paper.
Paper, "Co-operative Buying," H. W. Quernheim, St. Louis.
Discussion of paper.
Paper, "How to Combat Department Store and Catalogue House Competition," R. L. Hixson, Hannibal.
Discussion of paper.

AFTERNOON SESSION.

Open session. Reception of visitors.
Discussion, "Relations between Manufacturers, Jobbers and the Trade," J. W. Emery, president Western Stove Association, and R. W. Shapleigh, vice-president National Hardware Association.
Recess.

Thursday, February 22.

MORNING SESSION.

Paper, "How I Advertise," Mr. Halyard, Joplin.
Discussion of paper.
Resolutions and amendments.
Question Box.

Paper, "Co-operative Insurance," J. M. Kenyon, Maitland.

Discussion of paper.

E. Thomas, Trenton, is the secretary of this association.

Ohio Hardware Association.

The following circular relative to the annual meeting of the Ohio Hardware Association on February 28 and March 1 has just been sent to every Hardware merchant in the State:

DAYTON, OHIO, February 10, 1900.

To the Hardware Dealers of Ohio:

The sixth annual convention of the Ohio Hardware Association will be held at Cleveland on Wednesday and Thursday, February 28 and March 1, the headquarters being at the Chamber of Commerce Building. The Ohio Hardware Association was organized in 1894, and has held an annual convention each year with increasing interest until now the one at Cleveland bids fair to be the most remarkable in its history, and, if we base our opinion on past experience it will be the largest gathering of merchants in any one branch of trade ever held in the State. Our association now numbers nearly 300 members, comprising the active Hardware dealers of to-day who have unbounded faith in an organization which brings them together once a year to discuss the various topics of business, exchange ideas, plan for mutual protection and raise the standard of business methods. These are some of the benefits of organization, and, in addition thereto, must not be forgotten the enlarged acquaintance, agreeable friendships and the hearty good fellowship that has always existed between its members.

Cleveland, by reason of its prestige as a Hardware center, affords to all an excellent opportunity to visit the trade and manufactories located there. Already a committee from the manufacturers and jobbers is working with commendable zeal to make this the banner convention of our association. Our Executive Committee has prepared a programme which will be pleasing, instructive and beneficial. The session on Wednesday will begin at 2 p.m., and the sessions of Thursday at 9 a.m. and 2 p.m. The question box, which in the past two years has proven so beneficial, is also to be a feature in the coming conference. On Wednesday evening a reception and entertainment will be given to the members and their ladies.

On Thursday evening our annual banquet, which has always been the leading feature of our gatherings, will occur. This will prove a rare treat to all. The ladies will be entertained the same evening with a lunch at the Colonial Club, followed by a theater party.

The business sessions of the convention close on Thursday night, but the next day, Friday, will be spent in visiting the Hardware manufacturers and jobbers of the city, their committee having in charge the entertainment of the visitors for that day. We therefore suggest that you cannot afford to absent yourself from this meeting. The expense will only be nominal, inasmuch as the railroad fare is but one and one-third rate for the round trip, and the hotels of the city are to favor us with low rates.

We herewith extend to you a hearty invitation to join our association, if you are not now a member, and ask that you sign and detach the application blank and mail to the secretary.

Respectfully,

JOHN F. BAKER,
Secretary and Treasurer.

Accompanying the circular is a blank form for the use of those who desire to become members of the association.

THE WISCONSIN REFRIGERATOR COMPANY, Eau Claire, Wis., have issued a fine 72-page catalogue of their line of Peerless Refrigerators. These Refrigerators are constructed with patent cleansable side flues to secure circulation of air currents between the ice and provision chambers. By this system of flues the air is sent completely around the ice, giving the air the largest possible contact with the cooling surface of the ice. Much care has been taken in the construction of the boxes, seven walls inclosing the interior. These Refrigerators are made of hard wood. A very extensive line is supplied of domestic sizes. The company also manufacture large sizes for the use of butchers, grocers and others, and make an unusually fine line of sideboard construction.

THE BRIDGEPORT MFG. COMPANY, Bridgeport, Conn., have added to their facilities during the past year, and are prepared to manufacture sheet metal goods. This enables them to execute large contracts for specialties from manufacturers.

Indiana Retail Hardware Association.

(Continued from Our Last Issue.)

THOSE who were present at the convention held last week at Evansville were the following:

Robert Ingle, Princeton.
 W. H. Stewart, Oakland.
 H. I. Simmons, Evansville.
 E. M. Bush Hardware Company, Evansville.
 John L. Griffith, Ft. Branch.
 Shawhan & Boonshot Company, Petersburg.
 P. Eluere & Sons, Vincennes.
 Hatfield-Palmer Company, Washington.
 J. M. Scantlin, Princeton.
 M. J. Carnahan Company, Princeton.
 Redmond and Daugherty, Owensville.
 Wm. Kinderman, Boonville.
 Wm. Stewart, Owensville.
 Lucas & Funk, Princeton.
 Epperson, Harriott & Co., Princeton.
 Dufenbach Hardware Company, Huntingburg.
 W. H. Weed, Vincennes.
 W. W. Robb, New Harmony.
 French & Boyd, Poseyville.
 J. W. Emson & Co., Vincennes.
 A. H. Burkett, Gosport.
 Weise & Scheidt, Vincennes.
 H. P. Spaeth & Co., Aurora.
 Irving A. Sibley, South Bend.
 J. P. Riley, Paoli.
 Harrah & Fellows, Worthington.
 Albert Knecht, St. Leon.
 Cory & Stevens, Argos.
 Reichenbach & Wickenheiser, Huntington.
 Bartholomew & Co., Michigan City.
 O. E. Lang & Co., Mishawaka.
 C. F. Eckert, Wanatah.
 C. H. New, Bourbon.
 Hill Brothers, Carthage.
 J. L. Straub, Evansville.
 James Thomas, Greenfield.
 P. R. Storey & Co., New Albany.
 F. H. Bowen, Roachdale.
 E. C. Minus, Hammond.
 D. Frame & Co., N. Manchester.
 Lewis & Creed, New Albany.
 Goodwin & Miller, W. Lebanon.
 H. E. Straub, Evansville.
 Rosenberger, Klein & Co., Evansville.
 J. V. Ress, Tell City.
 A. Stratman, Huntingburg.
 Harvie & Son, Fairfield, Ill.
 J. C. Shanklin, Frankfort.
 Stratton & Hess, Argos.
 Hemmick & Jones, Columbia City.
 J. A. Cuttler, Bourbon.
 J. L. Fulton, Portland.
 W. L. Hubbard, Scottsburg.
 E. B. Schenck, Mt. Vernon.
 O. J. Baertich, Troy.
 Christian Roettger, Holland.
 Reid & Limp, Petersburg.

In our last issue we published the president's annual address, but the following address of welcome to visiting members and new members was also delivered by Mr. Weed:

Address of Welcome.

To the visitors and new members who have assembled here to-day we extend a cordial greeting and we hope to derive a great benefit for this association from having come in contact with you, getting your ideas on the different subjects that may come up for consideration. It is pleasing to note the active interest that you are taking in the large enrollment of new members from the northern part of our State, and it is well that you should, as the time has come, is now upon us, to show what just cause we have to the manufacturers and jobbers for organizing these several State associations and appealing to them for their co-operation and kindly consideration to recognize the real distributors of their wares to be the retail Hardware dealers, and in accordance with these facts to use more care in the distribution of their wares to the extent of keeping them out of the hands of unscrupulous department stores and catalogue houses, who sell many items in many instances re-

gardless of cost. This is more than a reasonable and plausible request.

The Hardware jobbers realize that without the co-operation of the manufacturers their cause as jobbers would be hopeless. We likewise realize that without the co-operation of the jobbers our cause is likewise hopeless. Will they co-operate with us? Let's try them, nothing is gained without an effort.

I. A. Sibley's Address.

Another address was that by Irving A. Sibley, South Bend, who spoke on behalf of the new members from Northern Indiana, the association, as noted in our last issue, having decided to cover the entire State and accordingly dropping "Southern" from the title:

In behalf of the new members from Northern Indiana, I think that I can say that it is a sincere pleasure to every one of us to find ourselves associated with gentlemen who were formerly members of this association in as earnest and good a cause as we have met for. I feel that by getting together, with Hardwaremen generally, whether we are able to accomplish all the results for which we meet or not, we cannot fail to accomplish much that will be of great benefit to us.

HARDWAREMEN.

I have for years regarded the men who are engaged in the retail Hardware business as the most progressive, active and reliable class of business men that there are in the country. I so regarded them for years before I was myself a retail Hardwareman, from the fact that from my observations as a traveling man, extending over a period of 16 years, I found that there were less failures in this rank than in any other vocation of mercantile life, and I think that it is due to the fact that men who are engaged in the Hardware business attend more closely to business. They are studying their own interests in a business way. I know that to-day conditions are arising, and arise every day, that require the

UNITED EFFORTS OF THE HARDWAREMEN

to counteract. I know that conditions are coming up in my business every day which make me feel that I would like to come in contact with you people and ask you your opinions and remedies. In meetings of this kind I have felt that every man in your town, and in every other town in the Hardware business, is in the business for the same purpose that I am; I am in the business to make a livelihood for my wife and children in an honest and upright way. The wholesale houses send their representatives to our town, and these representatives come to us and ask us for our support, and then they go to our customers and ask them for their support. I do not think it is right, and I do not think I can stop it alone, nor do I think it can be stopped by any individual man in this room. We can head it off, and it is right for us to do it. We have come to do it, and if we do not do it we are going to have our trade taken away from us.

CO-OPERATION.

I hope that every retail Hardware dealer in every State will become a member of this association, and that our association will elect delegates and send them to the national association; and I tell you, gentlemen, that there is no measurement of the amount of good that can be done by co-operation in an honorable way. I do not believe in being small and in asking for concessions that are not businesslike; still I presume there is not a man in this room who does not think that he is entitled to an honest profit. A common laborer gets his \$2 a day, and if he puts his money out at interest there is no reason why he should not be entitled to it, and there is no reason why we should not be entitled to an honest profit. I believe that this is the nucleus of the association that

we have here, and I know that it will grow, and I believe that we will derive benefits as it continues to grow. A recess was then taken.

After Recess.

Before presenting his report, which was published last week, Secretary W. W. Robb made the following remarks:

I want first to apologize to any who did not get our circulars. We found it very difficult, indeed, to get a list of names of dealers in the State, but through the courtesy of *The Iron Age* we got a directory of the Hardware dealers in the State. If there are any whose names we have not, I would be pleased if some one would give them to me so that I may see that they get circulars in the future.

I wish to say also, that we have the Question Box here for the purpose of putting in questions. Some of you would perhaps rather put in your questions in writing, so as to get them in proper shape. We will open it at the close of each session for answers. I wish to say also that there may be some things in my report that will form subject for debate; some things that will interest the organizations and dealers of other States, and I would like to take the responsibility of inviting visiting members to take part in the debates before this report is fully adopted.

Mr. Kinderman of Boonville moved that that part of the secretary's report pertaining to resolutions be referred to a special committee, and the balance be adopted as read. The motion was seconded.

THE SECRETARY: The object of getting expressions from you is that I would like that part of the report to go to a committee, because they might like to change it or add to it, and if they do not want to accept it as I have it, it can be amended, and we can accept it as amended. I would suggest that it be put in the hands of a committee, they to report as soon as they have studied it, and if they have any suggestions or additions to make they can do it.

THE PRESIDENT: All those in favor of appointing a special committee, say aye. The motion was carried.

THE PRESIDENT: I will name as this committee Messrs. Sibley, Lewis and Burkett.

The treasurer's report, after being read, was referred to the Auditing Committee, Messrs. Boonshot and Dupendach.

Constitution and By-Laws Committee.

THE SECRETARY: I have here a copy of the constitution and by-laws of the Illinois, Chicago and Louisville associations. I would like to suggest that a committee be appointed to look these over with ours, and if they find any improvements or changes that could be made they may report.

It was moved and seconded that a committee be appointed to compare the constitutions and by-laws, and if anything could be added to the Indiana Retail Hardware Association's constitution that it be referred to the convention. The motion was carried.

The committee appointed consisted of Joseph W. Knapp of Louisville, J. M. Scantlin of Princeton and C. P. Frame of North Manchester.

Secretary's Report Committee.

The Committee on Secretary's Report reported as follows:

We, the committee duly appointed, recommend that the report of the secretary be adopted, with the following amendment:

The president of this association and two delegates properly elected shall constitute a committee to attend a meeting looking to the organization of a national association of Hardware dealers, all expenses of such committee to be paid from the treasury of this association, and, if necessary, the secretary be instructed to make an assessment to defray such expenses.

The committee further suggests that on the election

of these delegates notice of same be wired to any State Hardware association now in session, together with appropriate greetings from this body, and that a copy of same be sent to all State Hardware associations and that they be requested to take similar action.

It was moved, seconded and carried that this report be adopted as read.

M. L. Corey's Address.

M. L. Corey of Argos then addressed the convention as follows:

When requested by your Committee on Programme to contribute something for this meeting, I did not refuse, but expected to get some other dealer to fill the place who was able and had time to prepare a good article. I discovered upon writing to some of my Hardware friends, and broaching the subject, that their business was requiring an unusual amount of attention just now, and a substitute couldn't be found. So, at the last moment (almost) I went at it myself, and as my subject deals mostly with our future history, and many writers have gone over the ground again and again, you will pardon me if I do not stick closely to my text in this my first attempt on this line.

You will agree that the objects of our association are to encourage stability of good business conditions, secure a better feeling and more extended acquaintance between dealers. To study the signs of the times, and approve that which leads to genuine advancement, general prosperity, and the peace and happiness of our people.

We should be

UNSELFISH, PROGRESSIVE AND UP TO DATE,

meeting the various questions that influence our attendance at this meeting in a spirit of fairness; decide upon our policy intelligently, with a firm determination to abide by the edicts and principles of our association. We are not here to advance prices, form a trust, restrict legitimate competition, retard genuine progress, nor predict disaster for the future. Neither are we of those who drift along realizing the growth of certain evils, continually reciting their tale of woe to their customers and friends, but afraid to utter a protest publicly or join an association even for fear some one might use this fact against them.

LOCAL TROUBLES.

We are sure that most of the local troubles may be removed by a more friendly feeling and understanding between dealers in their several localities. Some places this cannot be done.

There are dealers (and I am sorry to say some of them are in the Hardware business) who think they can't win any trade except by cutting prices and low, dirty, unprincipled tricks. They have few friends and many enemies. Yet they exist, usually riding some hobby that they imagine will bring them worldly gain. They seldom succeed; because, instead of simply going ahead, they are always struggling to keep others back.

Brother Hardware dealer, if you have any such to contend with you have my heartfelt sympathy.

LEGISLATION.

Again, the dealers through this association should watch legislation affecting our interests more carefully, and sound the alarm when measures detrimental to the retail trade are proposed.

We should take every opportunity to impress upon our lawmakers that Indiana business interests pay Indiana taxes. That while they may impose and collect a license from a poor peddler the giant catalogue houses treat with contempt every effort that has ever been made to regulate or restrict their way of doing business. Laws do not seem to reach them any more than our revenue act affected those unpatriotic bluffers, the express and telegraph companies, who make the public pay their share of government expenses in its hour of need.

It might be well to investigate the effects of free rural delivery. Also regarding the bill now before Congress to

increase weight of packages sent by mail to 20 pounds. Would this increase catalogue house trade? I am told they are working to secure its passage. This would mean strong competition for the express monopoly, who have by their unfair and discreditable policy become very unpopular. We naturally believe the Hardware dealer is entitled to the

HARDWARE TRADE OF HIS LOCALITY.

We believe that a large number of individual firms doing the business of our country will lead toward keeping capital divided, encourage the patriotism and independence of our people, afford more chances for the energetic ambitious young business man of the future, be productive of more homes and tend to check vice and immorality.

It has only been a few years since the department stores first appeared, yet their progress has been marked by the death struggles of thousands of business ventures, and every vacant room should warn the public of their blighting and destroying power. The havoc wrought upon the morals of young men and girls employed and poorly paid by these concerns cries out to high heaven for recognition, and should cause every thinking Christian man or woman to shun their portals.

What the department store has done in the city the catalogue house hopes to accomplish in the country towns and villages. Who will say we have no right to protect our homes and our business? To say to those who aid them to our disadvantage, Choose ye their trade or ours?

In handling this question we must use care and judgment, and

BE SURE OF OUR GROUND

before we step upon it. But once a move is made by our association we should be loyal, brave and prompt to act.

Remember this, to accomplish our aims we must concentrate our fire and all aim at the same target. Unite all the various State associations to accomplish some needed and just reform, and we are pretty sure to succeed. On the other hand, if we make a mistake it will not only reduce our influence, but have a tendency to keep many dealers out of our organization that we hope to have with us before another meeting.

I think the sentiment in favor of our association is almost universal. Many do not realize, however, the

IMPORTANCE OF BECOMING MEMBERS,

and some steps should be taken to bring this matter before them personally and secure their influence. I know that many who intended coming to this meeting were kept at home by distance, business engagements and other causes.

Let us not expect too much of this session. Make haste slowly, organize first, get acquainted, get together, feel at home, every one say something upon the questions brought before us.

Let us show our officers and these Evansville people that we enjoy this meeting, are here for a purpose, and have faith and confidence in the future of our association.

THE TRADE PRESS.

Let us not forget those stanch, influential friends, our trade papers. They are doing more to consolidate and benefit the Hardware trade than we realize. We can never accomplish anything without their help, and this they are giving us to the fullest extent, and most of the interest taken in our various State associations should be credited to them. Let us encourage them by our patronage and occasionally contribute items from our several localities.

ASSOCIATION RESULTS.

Through our association may we lay aside the petty quarrels and retaliations that mar and cloud our business life, establish friendships, improve our trade methods, and stand united to protect our common interests. Through it may we become better citizens, broaden our views, lead in improvements, and make the Hardware business

in our several towns what it should be, the leader and standard of all.

Committee on Constitution and By-Laws

reported as follows:

We find that the constitution adopted by the Retail Hardware Association of Indiana covers the ground fully. We do not see any need of making any changes in it whatever. We have read the various constitutions carefully and we find that your constitution is fully sufficient for the present requirements.

A motion that constitution and by-laws remain as they are was carried.

Department Stores.

Debate and discussion of relation of Hardware dealers to department stores followed, a number of letters being read by the secretary from wholesale houses indicating their position in the matter.

Adjournment was then had until Thursday morning.

THURSDAY MORNING'S SESSION.

The contents of the Question Box were first disposed of on Thursday morning, Secretary Robb presiding in the absence of Mr. Weed.

On motion 15 minutes' discussion was allowed on each question.

Some of the questions were the following:

How about warranting goods?

What is a legitimate profit on Hardware and Tools? Can you do an entirely cash business without a loss of trade?

Do you make a special effort to increase trade during the holiday season; if so, what method do you employ?

Is it practical to do a strictly one price business in Stoves, Hardware and Vehicles?

Should goods be marked in figures or characters?

On the latter question a motion was carried for a vote whether it was best to mark in letters or plain figures. Thirty-two voted for plain figures and seven for characters.

J. M. Scantlin of Princeton then presented the paper which was published in our last issue.

The Auditing Committee's report was read and accepted.

Secretary Robb moved that the incoming secretary be advised to forward a copy of the report of this meeting in pamphlet form, furnished by *The Iron Age*, to every retailer of Hardware in the State. The motion was carried.

Election of Officers.

The election of officers for the ensuing year resulted in the unanimous re-election of the former officials, who have served so efficiently and well.

Mr. Scantlin moved that a vote of thanks be tendered to them, which was done.

Committee-at-Large.

Mr. Sibley moved that a committee of 18, to be called a committee at large, be appointed, whose duties shall be the formation and carrying into effect of some plan to secure new members. The motion was carried.

An Appeal for Membership.

The following "Appeal to the Retail Hardware Merchants of Indiana" was then read and approved. Appended to it are the names of the committee at large, of which M. L. Corey was subsequently elected chairman:

We, the undersigned, committee of members appointed by the Indiana Retail Hardware Association, assembled in Evansville, February 7 and 8, 1900, beg to present to the retail Hardware merchants of this State an appeal to become members of our organization. The report of the proceedings herewith of this convention will convey some idea of the interest and strength of purpose shown; but full and comprehensive as the report is it does not and cannot convey to you the enthusiasm and possibl-

ties to be developed by a closer association of all the retail Hardware merchants of the State.

Association for the purpose of mutual protection is the spirit of the times, and is vital to our future welfare. The combinations that control the great staples on one hand and the jobbers' growing practice of soliciting consumers on the other are already making serious encroachments in the field of trade legitimately ours. We desire, therefore, to present for your consideration some of the conditions that may be brought about by intelligent co-operation—viz.:

1. We desire to lessen destructive competition.
2. We hope to prevent mere senseless opposition (such is not competition).
3. We desire legitimate freight rates re-established.
4. We want our relations to jobbers properly defined and established.
5. We want to develop a defense against mail order catalogue houses who pay no taxes in our respective communities, and who handle inferior goods.
6. We want to make clear the fact that as dealers our interests are mutual and not antagonistic.
7. Through this association we can discuss many questions that vitally affect our welfare.
8. Many other States have successful and profitable organizations, why not we? And make it not only as good but superior to others.
9. We need proper representation in a national association, for in such there will be great power and greater possibilities for good in our State associations.
10. To these ends and many others of great importance to us you should join us; there is nothing to lose and everything to gain by joining us in intelligent effort. Individually our protests and appeals for reforms are ignored, collectively we shall command and receive the attention and respect that is our due. We must harmonize and methodize existing conditions so that our reasonable business expectations may not be extinguished.

Address your inquiries upon the subject or applications to the committeeman in the following list nearest to you without delay:

Slater & Hess, Argos.
D. Frame & Son, North Manchester.
Fulton Hardware Company, Portland.
E. C. Minus, Hammond.
J. C. Shanklin, Frankfort.
Bartholomew & Co., Michigan City.
O. A. Lange & Co., Mishawaka.
C. H. New, Bourbon.
Goodwin & Miller, West Lebanon.
Corey & Stevens, Argos.
W. H. Weed, Vincennes.
E. M. Bush, Evansville.
E. Dufendach, Huntingburg.
M. J. Carnahan, Washington.
A. H. Burkett, Gosport.
Lewis & Creed, New Albany.
W. S. Hubbard, Scottsburg.
H. P. Spaeth & Co., Aurora.
Shawhan & Boonshot, Petersburg.

THURSDAY AFTERNOON'S SESSION.

The first business of the afternoon was the reading of a letter from Z. T. Miller, president of the Illinois Retail Hardware Dealers' Association, suggesting a meeting to be held in Chicago, March 12, 1900, for the purpose of taking steps looking to the formation of a national association of retail Hardware dealers, where the preliminaries of such an association may be fully discussed.

Secretary Robb moved that the communication, which is published elsewhere in this issue, be received and filed, and that two representatives be appointed to attend the Chicago meeting.

Irving A. Sibley of South Bend and E. M. Bush of Evansville were elected, with M. L. Corey of Argos and C. F. Boonshot of Petersburg as alternates.

Semiannual Meetings.

It was agreed that semiannual meetings be held, in accordance with the constitution of the association, and that the next meeting be held August 1 at Indianapolis.

Votes of Thanks.

After thanks were voted to Messrs. Bush, Kinderman and Simmons, as well as to the other members of the

Evansville Association, to the citizens and press of Evansville, and to *The Iron Age*, for their efforts in behalf of the association, the convention adjourned.

CONVENTION NOTES.

Wednesday evening, February 7, was given up to a smoker, at which representatives of manufacturers, as well as members of the association, were welcomed. The refreshments, music and other social features were thoroughly enjoyed by all.

Among those in attendance at the convention but not members was the well known fancy shot, John H. Mackie, representing the Peters Cartridge Company of Cincinnati, Ohio.

Frank Wells, representing E. C. Atkins & Co. of Indianapolis, had an attractive exhibit of the company's productions. The company distributed Thermometers to the dealers as souvenirs of the occasion.

The American Axe & Tool Company of New York were represented by A. G. Twigg, well known to the trade.

Henry B. Cowap talked Paints for the Patterson, Sargent Company of Chicago, Cleveland, and New York.

The visiting members and all present voted the reception accorded them by the business men of Evansville unsurpassed.

The Evansville Tool Works Company extended a cordial invitation to all visiting members to inspect their plant on Thursday afternoon. The invitation was unanimously accepted, and under the guidance of Mr. Lohoff they were shown the intricacies of manufacturing Axes, Hatchets, Hammers, &c., after which light refreshments were served.

One of the retail Hardware establishments of Evansville that attracted no little attention from the visiting members was that of the E. M. Bush Hardware Company, located on Main Street.

The Pickering Hardware Company.

THE PICKERING HARDWARE COMPANY, Cincinnati, Ohio, issue illustrated catalogue and price-list No. 5 of Tools and Supplies. The book is 7½ x 11 inches in size, bound in stiff cloth covers and contains 263 pages. An index of 19 pages covers lines of Machinists', Mechanics' and Blacksmiths' Tools and Supplies, Japanned Tinware, Shelf and Heavy Hardware. The catalogue describes about one-fourth of the lines carried in stock, showing only such Tools and Supplies as are most frequently sold to manufacturers. The business was established in 1858 and incorporated in 1888.

On the 1st inst. a change took place in the firm of Beals & Co., Buffalo, N. Y., dealers in Iron, Steel & Hardware, Railroad, Manufacturers' and Contractors' Tools and Supplies and Carriage Hardware and Wood Work. William R. Gass having retired from the firm the business will be continued under the same style by a new firm, comprising Edward P. Beals, Pascal P. Beals, Charles P. Rogers, Eugene J. McCarthy and Samuel C. Pratt. The general management of the business will be the same as heretofore. Edward P. Beals has been identified with the Hardware business of Buffalo for over half a century, having been an active partner of the old firm of Pratt & Co. for 40 years and the head of the present firm since their organization. Pascal P. Beals was also associated with the firm of Pratt & Co., and has been a member and business manager of Beals & Co. since 1893. Messrs. Rogers, McCarthy and Pratt have long been connected with the house.

M. W. McCready has bought out his former partners in the business of M. W. McCready & Co., Ashland, Ohio, and has resold a half interest to G. A. Ullman, who is a gentleman of means and cashier of the Farmers' Bank of Ashland. The business will be continued under the style of McCready & Co., Mr. McCready having the full management as heretofore. The line carried comprises Shelf and Heavy Hardware, Agricultural Implements, Sporting Goods, Buggies, Wind Engines, Grinding Mills, &c. The stock foots up about \$14,000 and business is referred to as very satisfactory, with a fine outlook for the future.

Wisconsin Retail Hardware Association.

(Continued from Our Last Issue.)

THE Wisconsin retail Hardware merchants turned out in larger numbers than ever before to attend the fourth annual meeting of their State association, which was held in Milwaukee on the 7th and 8th inst. The organization is meeting with steadily increasing support, the membership having grown fully 50 per cent. within the past year. So enthusiastic are both the officers and the members that it will not be surprising to see the same rate of growth the coming year. The importance of the convention of such a representative body of retail Hardware merchants had been foreseen by the manufacturing and jobbing interests, and their representatives were accordingly in attendance in strong force. Seldom, if ever, has a State convention of retail Hardware merchants had such attention given it as on this occasion. The association's headquarters, the Republican House, fairly blossomed with placards of business houses announcing their exhibits of samples in various rooms in the hotel. Some of the exhibits were surprisingly extensive, great pains having been taken and considerable expense incurred in making a striking display. The great swarm of members and others naturally created much enthusiasm. The proceedings, therefore, were conducted with an intensity of interest which invested even the details of routine business with an unwonted air of high importance.

Meeting of the Executive Committee.

The officers for the term just expiring were as follows: President, James Montgomery of Wausau; vice-president, A. H. Sheldon of Janesville; secretary, C. A. Peck of Berlin; treasurer, H. F. Schlegelmilch of Eau Claire; Executive Committee, the foregoing, with D. G. James of Richland Center, Arthur Hines of Elkhart Lake, Otto Schlaffer of Appleton, and J. Kornelly of Milwaukee. They held a private meeting in their official capacity as the Executive Board on Wednesday morning and passed upon a number of details of the business of the association in advance of the general meeting of the members.

OPENING SESSION.

The sessions of the convention were held in Lipp's Hall. This hall had been used for two previous annual meetings, for which it had proved abundantly roomy, but it was clearly evident when the members gathered in it on Wednesday afternoon that the association had outgrown the old quarters and would be obliged to seek a larger place another year.

Shortly after 2 o'clock President Montgomery called the gathering to order and introduced Mayor Rose of Milwaukee, who welcomed the association to the city in an extremely felicitous speech, to which the President made proper response, following it by the presidential address to the members, duly reported in our issue of last week.

Vice-President A. H. Sheldon was introduced and proceeded to read the following address:

Address by Vice-President Sheldon.

During the fall of 1897 I received a letter from our worthy ex-President Andrew Noll, asking me, among many others, to meet the following February all the Hardwaremen that could be induced to go to Milwaukee and consult together as to whether an association could be formed for the betterment of our condition as Hardware dealers; and right here I will thank him heartily for pushing the thing through as vigorously as he did. It was not a great crowd that responded, but what they lacked in numbers they made up in zeal. From this start we have grown to some 300 members, and no one

can truthfully say a more intelligent, responsible and respectable lot of men can be gathered from any department of trade in the State. Our object, as I before said, was the betterment of our condition as Hardware dealers, and this was to be accomplished in many ways. I was anxious for enlightenment on various subjects and wanted to hear the experiences of those who had long been at the helm and were known to be successful Hardwaremen. Then we had this knotty problem of department store business to deal with, and more than all to get

CONCERTED ACTION

among all the dealers in the State in any work of reformation we might undertake, and this could not be accomplished unless we thoroughly knew each other and worked together. We will admit that we have not yet bagged the game, but this every one knows full well, we are after them and will not rest until we get some relief. We should not expect to accomplish in a day what will take years to do, but one thing is certain, jobbers and manufacturers have learned to respect us, and the majority of them favor the association and bid us God speed.

SOARING PRICES.

We have just passed through perhaps the most eventful year of our lives as Hardwaremen, for we have realized the dizzy height that prices have reached more than any other department of trade. Nails that one year ago sold at \$1.25 rate are now said to be firm at \$3.53 rate, unless they have squeezed them up another quarter the past week. Registers that were 80 and 20 are 30 and 10, and nearly everything else in our line has gone out of sight, but what is to be regretted is that the majority of dealers closed out the main part of their stock at old prices while they were educating their trade as to high prices. I wonder if, when the slump comes, they will keep on selling at the prices of to-day. One year ago 3 bushels of barley bought one keg of Nails. Now it takes 10 bushels to accomplish the same purpose, and we hardly know what the end will be, for if the highway robbers could corner breadstuffs the widow and orphan might cry for bread at \$10 per loaf, and the millionaire corporations would let them die without a thought.

SUPPLY AND DEMAND

are to my mind the only healthy regulators of trade, and should always continue to be, and when the individuality of mankind is taken away and concentrated in a few, then do we begin to degenerate as business men. I believe the present time is a critical one for retail dealers, and they should carefully know "where they are at," and purchase goods only as they need them, for present prices must curtail trade, and when surplus goods commence to accumulate no one will desire to carry them, and it will be wise to be prepared for any decline that may occur.

PRICES ON A SETTLED BASIS.

Of course it may be that the immense demand for our products abroad will keep up as during the past season; if so, we may not see much decline for some time, but excessive prices will tend to diminish that. We all sincerely hope that the time may soon come when prices will be settled, at least so that we can intelligently know what course to pursue.

ALL TAKE A HAND.

There will be many subjects brought before you for discussion while we are in session, and the only way to make the meetings a success is for all to take a hand, if only to say a word; for no one is so enlightened but he may gain some good ideas from the thoughts of others.

My earnest desire is that these meetings may prove beneficial to us all, and when we get back to our homes we may be better prepared for another season's work.

The Hardwareman is "in a boat,"
Three vampires have him by the throat,
Between them they'll take every groat
Unless he is very careful.

The capital "Trust" has raised the price
On all his stock, and he can't entice
His customer to think it nice
If he raises his to meet it.

The customer trust keeps profits low,
If interest you ask to your rival they go.
The polite "dead beat" is also our foe,
And every dealer has them.

The third vampire is much the worst—
The cut throat folly by which we're curst
When we kill a rival's trade we thirst,
Like a toper after his toddy.

For safety from the first vampire
To the law we'll have to look;
The other two we've hatched ourselves
And we their "goose must cook."

The means by which to bring about
This wished for consummation,
Will be, instead of cut throat strife,
A wise co-operation.

And to this end we gather here,
In feast of reason and good cheer
Our hearts to warm, our heads to clear,
We Hardwaremen of Wisconsin.

Ex-President John Hughes was introduced and spoke as follows:

Address by Ex-President Hughes.

I have a very few words to tell you. I think we have all reason to congratulate ourselves at the success of our association, as you have been told before. I never saw such a nice crowd before. I verily believe from your looks and actions that you are earnest in the business we are engaged in. Now I cannot tell very much about what we have accomplished. There are many things we have not. Many things we should accomplish we will not be able to. One of the best things we have accomplished is

MAKING FRIENDS WITH EACH OTHER.

I know that in our town we have accomplished a great deal in that respect, and I know of several surrounding towns where our influence for good has been felt. As to our hopes of accomplishing something in a larger sphere in the United States, I am glad to know that many institutions of this kind have sprung up in other States.

NATIONAL ASSOCIATION.

There are many questions that a national retail Hardware association can make itself useful in. We should try and elect to such an association the right sort of men. I don't think they should be numerous, one delegate from each State association is quite sufficient and one delegate from all cities of over a certain number of inhabitants. I would have those men young and vigorous and progressive, knowing our rights, and as some one has said, "daring to maintain them." I would have men that would think more of business than of banquets. I would have men that would think more of furthering the affairs of the order or demands of the association than of oratory. In my opinion there is nothing that detracts from business more than oratory.

AMONG THE QUESTIONS

that a national association could busy itself about appropriately in a minor way is the placing of better labels upon packages of Hardware, making them more legible. They should be far plainer so that you could see at a glance what is within the package or box.

Another minor matter is as to Carriage, Machine and other Bolts. It would be a small matter for manufacturers to screw the Nuts on those Bolts a little further. It would take very little persuasion to get them to do it.

Then we have broader questions to attack, appropriately, I think. Our system of designating the sizes of Nails is miserable. The system comes from England. It was the custom 300 years ago. Why not designate them the same as small Nails, by lengths and gauge?

Another question is the parcels post scheme that is talked of, and which other countries are very happily enjoying. We should petition our members of Congress to pay attention to it.

Another matter is that of postal savings banks. They have proven eminently successful in other countries.

Another matter is that of weights and measures. We have a decimal system of currency, why not a decimal system of weights and measures? The great commercial nations of the earth have adopted that, and we lag behind. I should press this as a national association upon our law makers, and insist that some reform be inaugurated.

Now, gentlemen, these are matters that a national association could deal with. There are matters that we cannot as a State association handle as well.

Appointment of Committees.

The president proceeded to appoint the following committees: Committee on Transportation, Ralph Burtis of Oshkosh and F. C. Burr of Milwaukee. Committee on Resolutions, R. Murdoch of Broadhead, A. G. Cox of Augusta and A. D. Race of Depere. Committee on Grievances, John Hughes of Fond du Lac, John Hessel of Antigo and L. B. Ruka of Boscobel. Reception Committee, Andrew Noll of Chilton, Mr. Hay of Oshkosh and M. F. Howells of Sparta. Sergeant-at-Arms, F. J. Wilkie of Fond du Lac.

Secretary's Report.

The president called for the report of the secretary, C. A. Peck, who read his report as printed in our last issue.

Treasurer's Report.

The report of Treasurer H. F. Schlegelmilch was called for, who enumerated the various items of receipts and expenditures, showing a balance on hand of \$445.93.

Mr. Bump's Remarks.

Calls were made for a speech by J. C. Bump, representing the Eclipse Stove Company, who had been instrumental in adding many new members. He said in response:

Mr. Peck has given me credit for securing members for the association. I am not entitled to any particular credit for adding to your membership, for the simple reason it was for my interest to do so. I believe in organization. In union there is strength. If you people act together in this matter you can accomplish what you have set out to do.

Mr. Bump then referred to department stores and catalogue houses, and said that if the members of the association would stand together on this question the evils from which they now suffer could be corrected.

H. Raymond of Racine was called to the floor as one of the veterans in the trade. He related some amusing experiences.

Henry M. Gay of Milwaukee was requested to relate some of the funny episodes in his long career as a traveling salesman, which he proceeded to do as follows:

Funny Incidents in the 33 Years' Experience of a Commercial Traveler.

An "old timer" whom we will call "Ira" was asked recently to relate some incidents of his long experience "on the road." This was the result:

I have traveled over 33 years in Wisconsin and the States adjoining, and now look back over my experience wondering how it happened that I have never until now related any of same. I have driven many miles over corduroy bridges and through miles of mud and sloughs. Have "teamed it" for six weeks' trip in Northern Iowa (before the railroads were put in). Have faced prairie wind storms; driven 30 miles with the thermometer 28 degrees below zero; have driven into snow cuts where the snow had been piled up on both sides of the roadway to the height of 15 feet, and where in entering it was necessary to send a man ahead to keep other teams from entering until we got through, as there was but the one track. I have been snow bound for four days at a time

in a little country hamlet; have ridden 15 miles in an open stage in July when the thermometer stood at 108 in the shade; have made long drives in rain, in one instance of which there was so much water standing in our buggy box that I had to bore holes in the bottom of the buggy to let it out and thus keep my sample cases and contents from getting soaked. Have had many trials of above nature, but I believe that after the recollection of all such experiences have disappeared I will ever remember distinctly many of the funny incidents that I have been witness to since being "on the road." I will give you a few samples of same.

A STORY ABOUT SPILLVILLE.

In 1867 when I "made" Northern Iowa by team I used to go to many very small towns. At some of them I was the only Hardwareman making the town. The boys in the store would say on my arriving, "Hello! here's the Hardwareman." I remember striking Spillville, Iowa, on a holiday (they had a church holiday there in those days about once a week and sometimes oftener); when I reached there I saw that my customer's store was crowded like an auction room in olden times. I could see my customer in rear end of the store but couldn't get to him; couldn't squeeze through the jabbering and jostling women in the store, who were doing more visiting than buying. I concluded, however, to "rush" matters all I could, so I walked the whole length of the store on the counter, and getting at the buyer told him I must see him and get through before dinner. I said, "Some of your customers are quite noisy." "Yes," he said, "some of them they buy for 5 cents goods and they make for \$10 noise." Well, I got out my catalogue and order book and took down what he had on his want book, and turning over my catalogue I came to Wringers. He said, "For what is dot?" I said, "For wringing the water out of clothes." He said, pointing out of the window, "Dot's the onliest kind of Wringers da haf here." I looked out and saw three or four women standing in the creek wringing with their hands some clothes they were washing in the creek. I hadn't any Wringers of that kind.

Next we came to Stove Polish and Shoe Blacking. He ordered a dozen Stove Polish, and said, "Shoe Polish, vot ish dat?" I replied, "To black your shoes;" he said, throwing up one hand and shrugging his shoulders, "Och! I plack twice my shoes in 17 years." I turned over my catalogue and came to Carriage Bolts. "How much you throw off on de Polts?" "The discount from the list," I said, "is 80 per cent." He replied, "No, dot voodn't pay; I puy in Dubuque for 70 per cent. und dot 10 pretsent dot makes de freight." Further on we came to Hoes; he thought he might need some Hoes. "Send me a quarter of a dozen." "Socket or shank?" said I. "Mix them," said he. Smiling to myself I said, "Two shank and one socket, or two socket and one shank?" He looked perplexed for a while and after thinking it all over decided that he had better not take any at all. After that I didn't suggest any options. "Was everything all right on the last order," said I? "No," he replied, "I ordered a gross of Canopies (a small piece of tin for putting on end of Wash Basin Handles, &c.) and they sent me a gross of Can openers. The other time I orderet 100 Bolts, 1½ x ¼, und they sentet me 1¼ x ½, they voodent go in Spillville und I sentet them pack." I had to make everything all right with him before leaving.

THE BOY AND THE MULE.

In 1869 or later, when railroad was built to within about 20 miles of Norwood, Iowa, I took a stage for there from Carpenter Station. It was a lovely day, and I knew I'd enjoy the ride over the prairie. Just as we were about to pull out along came a green looking lad leading a mule. He asked the stage driver if he'd let him ride to Norwood and lead the mule behind the wagon. Stage driver asked him what he wanted to go to Norwood for. The boy said he "heerd the tarvern keeper at Norwood wanted to hire a boy and I found his mule yisterday and thought ef I'd take his mule home mebbey he'd give me the job." "Are you a purty good boy," says the driver. "Yes, sir," says the lad. "Well, get aboard, but hang onto the mule." "Oh, I'll do that," says the lad. Well, we started on our journey, the boy sitting in the hind end of the stage with his feet hanging over the dashboard and a long rope wound about twice or three times around his waist, to the end of which was tied the mule. All went well till we got out about 10 miles, when we met a rig coming from opposite direction. It was a curious looking outfit as it appeared from a distance, but when we got close enough to see what it was it proved to be a yoke of steers hitched up to a light democrat wagon, and the old lady that was driving held a red umbrella over her head. We trotted by at the rate of about 6 miles an hour. Suddenly the mule saw the rig and was amazed. He planted his four feet into the sand and never budged. Along went the stage, out flew the

boy, the rope unwound and the boy spun around like a whirligig and landed on his back under the mule's nose. I'll never forget the roaring laugh of that stage driver nor the amazed look of the mule as he looked at the boy at his feet.

A NEW CLERK.

Several years later I was making some small towns in Southern Wisconsin. I was carrying two trunks and three or four grips that trip. At the store where I expected to show my samples (Mr. Meiswinkel) they had a new clerk who had a good deal to say. The store was small and crowded with goods, and it was about all the drayman could do to get my trunks inside the door. Just as he had gotten them inside along came the new clerk. I was walking in carrying three satchels and a small telescope. He looked at the baggage and then at me, and going to Mr. Meiswinkel said, "For heaven's sake who is moving in here now; that fellow with his packs looks like the traveling brass band man that I saw down to Coney Island last summer."

SELLING A NEW SIFTER,

In 1875, or about, I was calling on the jobbing trade, representing an Eastern firm. I was in the office of a Hardware jobber, at St. Paul. There were three or four travelers ahead of me awaiting an audience with the buyer. I took my place, intending to await my turn; was standing nearest the outer door when in bounced a young man with a sample of some kind of Flour Sifter in his hand. I learned later that he was from Boston, and that this was his first trip and that he had come to St. Paul direct from Boston and was going to work all the jobbing points on his way home. This was his first call. He walked up to me, held his Sifter out in his hand and said: "It is not the duty of a traveling salesman to inform a buyer what is a salable article. I have here—" "Hold on," says I, "You are talking to the wrong man. I am not the buyer. I'm trying to get a chance to sell Mr. Hecker some Sifters, &c., myself." "Excuse me!" he said in a loud voice, and deliberately walked to Mr. Hecker (the old gentleman) and began: "Is this Mr. Hecker?" "Yes, sir." He then elevated his sample Sifter and began: "It is not the duty of a travelling salesman to inform a buyer what is a salable article." "Hold on," says Mr. Hecker, "You will have to see my son, who does the buying." Mr. Hecker pointed out his son. Nothing daunted, the kid salesman strode over to the buyer and started in, "It is not the duty of a traveling salesman—" but on looking around and seeing the grin on five or six faces present he at last realized that he'd better "come in later." He had a patent Sifter to show and a patent speech to make, which he seemed to think would do the whole business everywhere.

The Northwestern Association.

An inquiry by a member was made of the secretary for a report of the relations of the association with the Northwestern Association. The secretary said:

SECRETARY PECK: It was the understanding that the expense of the Northwestern Association should be divided *pro rata* according to membership between the three States. Minnesota employed a secretary at an expense of \$1200 a year. They rented an office and went into it perhaps more thoroughly than we did. I presume their secretary did a great deal more work than ours. We notified them that they must not expect us to pay more than \$1.00 a member and we agreed upon that amount. There is one thing that cannot be estimated by dollars and cents, and that is the influence that the three States have on jobbers and manufacturers.

A MEMBER: As far as I am concerned it always struck me from the first that we were not getting value received for what we have paid. That is the point I wish to make.

THE PRESIDENT: The Executive Committee, at its meeting to-day, passed a resolution placing this matter of dues in the Northwestern Association in the hands of our secretary, with power to act, and we expect to make arrangements for the coming year at a much less rate than has been paid in the past. I consider it of vital importance to us that we cling to that association.

Invitation to Entertainment.

The secretary read the following communication:

To the Members of the Wisconsin Retail Hardware Association:

The Hardware manufacturers and jobbers of Milwaukee extend to you cordial greetings and trust that

your sessions will be profitable and enjoyable. The date of your convention forbids our showing you the beauties of Milwaukee, or entertaining you as we should like. Herewith inclosed find tickets for the Davidson Theater for Wednesday and the Alhambra for Thursday evening. Please accept them with our best wishes. We should be pleased to receive a visit from you at our places of business.

JOHN FRITZLAFF HARDWARE COMPANY.
WM. FRANKFURTH HARDWARE COMPANY.
FULLER & WARREN STOVE COMPANY.
BRAND STOVE COMPANY.
SPEICH STOVE REPAIR COMPANY.
LEHRKIND & DAEVEL COMPANY.
LINDSAY BROTHERS COMPANY.
J. P. LINDEMAN & SONS.
A. J. LINDEMAN & HOVERSON COMPANY.
GEUDER & PAESCHKE MFG. COMPANY.
NATIONAL ENAMELING & STAMPING COMPANY.

MILWAUKEE, February 7, 1900.

The reading of the communication was followed by expressions of approval and a formal vote of thanks.

On motion the convention adjourned until 9 o'clock the next morning.

THURSDAY MORNING SESSION.

The convention was called to order by President Montgomery at 9:30.

On motion the calling of the roll was dispensed with, in view of the fact that the members were expected to register their names on the book of the association. The register showed the following in attendance:

Those in Attendance.

O. P. Schlafer, Schlafer Hardware Company, Appleton, Wis.
J. Hessel, the J. Hessel Company, Antigo.
W. F. Krueger of Columbus.
H. B. Simcox, H. B. Simcox & Co., Marinette.
C. W. Lehmann, C. W. Lehmann & Co., Cedarburg.
J. Krueger, Columbus.
A. G. Cox, Augusta.
H. H. Marah, Oregon.
H. Raymond, Racine.
R. J. Evans, Morkessa.
John Sturner, Lowell.
E. C. Williams, Waupaca.
E. H. Daniels, Milwaukee.
Robert Moor, Reeseville.
Carroll Lucas, Menomonie.
John Hamilton, Westfield.
Wm. Helwig, Mondon.
John F. Wegner, Fond du Lac.
C. W. Steinacker, Reeseville.
Hermann Fesenfeld, Black Earth.
G. W. Adams of Gurnee.
Charles Bullwinkle, Jefferson.
Geo. A. Spiegelberg, Brownsville.
August Siefert, Feedsburg.
E. Jorgenson, Racine.
Foy & Shondeau, Kenosha.
L. B. Luka, Luka Bros. Mfg. Company, Boscobel.
H. Wenter, Clintonville.
Wm. Wedde, Campbellsport.
H. G. Laun, Wausaukee.
C. F. Pieper, Columbus.
H. H. Miller, Sheboygan.
Thomas Madder, Pardeeville.
F. Rassmann, Beaver Dam.
E. J. Schenzelberg, Sheboygan Falls.
J. F. Hauentsen, Sheboygan Falls.
C. F. Hanson, Markesan.
R. H. Suettinger, Two Rivers.
W. R. Hay, Sturgeon Bay.
J. J. Hosmeed, Racine.
Walter E. Brown, South Milwaukee.
Stollenwoerk Bros., Milwaukee.
M. J. Dott, Sun Prairie.
L. L. Dowd, Pittsville.
J. L. Robler, Fond du Lac.
L. J. Martin, Viroqua.
Charles Kuebler, Viroqua.
L. M. Nash, Centralia.
E. K. Cunningham, Thomas & Cunningham, Berlin.
F. D. Schnee, Schnee Bros., Humcurro.
Albert A. Witperman, Shawano.
A. G. Kroncke, Kroncke Bros., Madison.
E. A. Leifler, Scott.
Charles Schrader, Lake Mills.
Henry Wernecke, Wernecke & Schmitz, Manitowoc.
Adam Kroner, La Crosse.
W. Rathack, Jr., W. Rathack & Sons, Manitowoc.
Fred. W. Meyer, Montrose.
H. E. Frisbie, Pine River.
W. F. Smith, Oconomowoc.
Wm. Pritchard, Randolph.
Charles Kroesing, Chilton.
Otto Gallun, Milwaukee.
Mohr & Jones Hardware Company, Racine.
R. Fritz, Racine.
Murphy & Kersten, Racine.
John Droegkamp, Milwaukee.
J. M. Jenkinson, Ripon.
B. Undgrot, Washburn.
E. Bergman, Washburn.
Edward Foulkes, Fond du Lac.
O. J. Williams, Cambria.
F. E. McGraw, Peshtigo.
J. A. Dunstan, Hollandale.
Worrel & Zeman, Manitowoc.
J. A. Wilkie, Fond du Lac.
August Thielte, Mayville.
Vetter Bros., Milwaukee.
C. A. Corder, Waukesha.
C. E. Dewey, Kenosha.
R. E. Root, Amro.
F. W. Mathaens, New Holstein.
Geo. H. Bruns, Lake Mills.
W. H. Newburgh, Lansing, Mich.
Howard Bement, Lansing, Mich.
H. S. Bartholomew, Lansing, Mich.
Lee A. Smith, Lansing, Mich.
F. C. Burr, Milwaukee.
Wm. Weber, Watertown.
F. M. Finch, Whitewater.
J. W. Hall, Whitewater.
Torgeson Bros., Stoughton.
J. Ellingson & Co., Edgerton.
Ole Wigdale, Ft. Atkinson.
H. T. Prenzlow, Johnson's Creek.
Ralph Burtis, Frank Leach Hardware Company, Oshkosh.
H. F. Krueger, Wm. Krueger & Co., Neenah.
A. Esser, Esser & Schmidt, Hartford.
J. M. Duecker, Kiel.
Hugo Duecker, Kiel.
E. E. Ramm, New London.
J. Kornely, Milwaukee.
L. C. Peck, Berlin.
C. A. Peck, Berlin.
Jno. Hughes, Fond du Lac.
A. Selfert, Axtell.
D. G. James, Richland Center.
J. Wallschlaeger & Son, Manitowoc.
S. E. McDowell, Pewaukee.
Pflugradt Bros., Milwaukee.
Gerkmann Bros., Milwaukee.
Wm. Weber, Watertown.
J. C. Kinsman, Manawa.
H. W. Hurm & Co., Greenwood.
S. F. Menzel, Menzel & Kempf, Oshkosh.
Jno. M. Hager, Ft. Atkinson.
H. J. Heyer, Darian.
August Schupinsky, Milwaukee.
Wm. G. Grosgean, Milwaukee.
Andrew Noll, Chilton.
Jno. Hessel, Antigo.
Hay Hardware Company, Oshkosh.
H. C. Scofield, Scofield & Co., Sturgeon Bay.
J. H. Hayden, J. H. Hayden Hardware Company, Sun Prairie.
W. W. Hayden, J. H. Hayden Hardware Company, Sun Prairie.
C. W. Steinacker, Reeseville.
Jno. Sturner, Lowell.
Thomas Madden, Pardeeville.
R. Moore, Reeseville.
Charles Kartak, Oconomowoc.
A. D. Race, Depere.
W. M. Shandrew, Kenosha.
Geo. Redcker, Kenosha.
Smith Bros., Wauwatosa.
C. B. Wagner, Burlington.
R. Puchner, Wittenberg.
A. W. Puchner, Edgar.
Jacob J. Freund, Seymour.
A. W. Timmer, Waldo.
A. A. Jacobs, North Prairie.
A. H. Sheldon, Janesville.
Geo. P. Dana, Fond du Lac.
J. B. Weinsick, Plymouth.
B. J. Lacy, East Troy.
E. Goodman, Mukwonago.
D. A. Lewis, Baraboo.
C. E. Simpson, Sparta.
F. Hoernel, Racine.
F. Stroebe, Meenah.
Fred. Merbach, South Kaukauna.
O. Hanson, Eau Claire.
James Montgomery, Wausau.

On motion the president appointed a committee, consisting of Mr. James of Richland Center, Mr. Hay of Oshkosh, Mr. Lewis of Antigo and Mr. Kornely of Milwaukee, to investigate and report upon more suitable accommodations for the next annual meeting.

Greetings from Indiana.

THE SECRETARY: The following telegram has just been received from Evansville, Ind.:

"To the president and secretary of the Wisconsin Retail Hardware Association: Our Indiana Retail Hardware Dealers' Association in convention to day extend to your association congratulations and compliments.

"W. H. WEED, President.

"W. W. ROBB, Secretary.

"Dated February 8, 1900."

THE PRESIDENT: You have heard the reading of the telegram, what is your pleasure?

It was moved and seconded that the telegram be spread upon the minutes, and a like reply be sent to the Indiana Hardware Dealers' Convention. Motion carried.

THE SECRETARY: I have prepared an answer: "To the secretary of the Indiana Hardware Dealers' Association: Congratulations and wishes for the same degree of prosperity and success that we enjoy."

Election of Officers.

The convention proceeded to elect officers for the ensuing year. President Montgomery having declined to serve for another year, Vice-President A. H. Sheldon of Janesville was nominated for president and unanimously elected. He was escorted to the chair and installed, making a very brief speech of thanks and acceptance.

John Hessel of Antigo was nominated for vice-president, and was also unanimously elected.

A motion was passed making the secretary's salary \$300 for the coming year, after which C. A. Peck was nominated for secretary and unanimously elected.

Treasurer Schlegelmilch declined to serve for another year, and B. B. Scofield of Sturgeon Bay and H. J. Steinbach of Rice Lake were nominated. Mr. Steinbach received a majority of the votes cast, and was declared elected.

Announcement was made in behalf of the Executive Committee that they had decided to recommend to the association the wisdom of having two members of the committee hold over instead of electing an entirely new set of officers. Accordingly, Arthur Heins and O. P. Schlafer were nominated for re election, and the choice was unanimously ratified. For the other two members of the Executive Committee the convention's choice fell upon D. S. Kusel of Watertown, and Henry Droegkamp of Milwaukee.

A motion was adopted giving a vote of thanks to the officers for the faithful performance of their duties in the past year.

Fire Insurance.

THE PRESIDENT: The next thing in order is "Talks on Insurance." Have you anything to say with regard to this matter of insurance for our association?

THE SECRETARY: I presume most of you have received reports from Minnesota. They have incorporated the insurance feature in their work up there, and would like to extend it to the Wisconsin association. All members of the Wisconsin Hardware Association are entitled to membership in their insurance company. It is something on the order of farmers' co-operative insurance companies or church insurance companies that have been doing business the last few years. They expect that any one that goes into the insurance will pay board rates—whatever you have been paying on the same risk for the past year—and then at the end of the year there will be a division back, which they undertake to say will be, I think, as much as 25 or 40 per cent. It is claimed that the Hardwaremen of the State are paying too much dry goods and department store fire losses. I would be glad to give any member of the association interested in it any further information in my power if they will ask me

about it. It does seem to me a very good thing for the Hardwaremen to look out for themselves.

A MEMBER: No one seems to be able to tell what we are to get out of it; if we have anything for the good of our order why not have it in our own State instead of paying to an outside sister organization?

A MEMBER: I think it is the right way to look at it. It takes \$100,000 to start an insurance company. I think our membership is strong enough for us to get up an organization if we think it will pay.

MR. NOLL: I don't believe myself in mutual insurance, either for life or fire insurance. I think it is more of a local matter. We have local agents in each town where we live. They get 15 per cent. commission, but in case of fire they stand up for us. I don't think we could get the same protection from a mutual insurance company.

MR. DOUD: I think that the question of a mutual insurance company is a pretty good one. Now, one of the most prosperous insurance companies in the country anywhere is the Millers' National Insurance Company. It is run on a similar plan, all millers working together. I think that rather than take any action upon this question it would be a good plan to get a committee to look it up and see what the percentage of loss has been during the last few years, and see about where we stand and make a report and it might be to our interest to have something of that kind.

MR. RAYMAND: Mr. President, my recollection is, the history of a great many mutual insurance companies and local business of loan associations has been bad.

THE PRESIDENT: Our time is short, and perhaps this is a matter for each one to decide for himself.

Next Convention.

THE SECRETARY: I have a letter from Mayor Rose and also a letter from the secretary of the Citizens' Business League, asking that we hold our next convention in Milwaukee in 1901. They would be pleased to have us do so and entertain us. It is only another evidence to my mind that we are growing, because I don't think in the first few years of our organization there was much attention paid to where we met.

It was moved and seconded that the next annual meeting of the association be held in Milwaukee at the time set forth in the constitution. Motion carried.

Headquarters.

The committee appointed to arrange for headquarters for the next meeting was called on for a report. Mr. James of that committee gave the details of a proposition made by the proprietors of the Plankinton House. After some discussion on motion the matter was left to the discretion of the Executive Committee as to the arrangement that would be made.

Organizing a National Association.

THE SECRETARY: I have two letters from Z. T. Miller, president of the Illionis Retail Hardware Dealers' Association, which I will read:

BLOOMINGTON, ILL., February 6, 1900.

JAMES MONTGOMERY, Esq., President:

Dear Sir: I am very sorry to advise you that it will be impossible for me to attend your meeting as promised. Business affairs have arisen to-day which demand my personal attention and prevent my leaving home at present. I inclose condensed letter of subject with which you are already familiar, excepting change of date. There are other matters that I desire to investigate while at your meeting, but will now have to await some other opportunity.

Hoping you will have an interesting meeting and wishing your association every success, I remain

Respectfully,

Z. T. MILLER.

BLOOMINGTON, ILL., February 6, 1900.

JAMES MONTGOMERY, Esq., Milwaukee, Wis.:

Dear Sir: A number of the officers of State Retail Hardware Dealers' Associations, believing that the importance and efficiency of our State associations would be greatly increased by national association, have decided to hold a national conference at Chicago on March 13 for the purpose of harmonizing action in all the States upon issues now pending in either, eliciting ideas upon deriv-

ing greatest possible efficiency or organized effort and to discuss the preliminaries of national association. We deem it very important to the success and influence of this conference that its conclusions be evolved from the largest possible representation of interests. Please request your association to consider this matter and provide for proper representation.

The benefits likely to accrue from such a meeting are too apparent to need extensive explanation. The fact that at present each State association represents less than 8 per cent. of the efficiency possible through closer co-operation with sister associations, and in like ratio depreciates the importance of State associations to the dealer, demonstrates the necessity of uniting our efforts through some manner of a national representative body. We all appreciate that the launching of a successful national association will require time, labor and careful forethought, yet the need of such association can never become more important than it is to-day, nor can it ever be accomplished without a beginning. The conference is fully indorsed by H. A. Cole, president Iowa Association; Frank Rudy, president Kansas Association; J. A. Cole, secretary Kansas Association; H. W. Weber, president Michigan Association; W. S. Richardson, president Texas Association.

Hoping your association will give this matter due consideration and be properly represented at the conference, I remain,

Respectfully,

Z. T. MILLER.

President Illinois Retail Hardware Dealers' Association.

A motion was made and adopted that the president and secretary attend the meeting to arrange for a national association.

A paper was then read by H. F. Schlegelmilch of Eau Claire on

How to Increase Your Business.

I may have nothing new to tell you as to how to increase your business. It depends largely upon good business methods, with which every good business man is undoubtedly familiar.

To increase your business you must sell more goods. How many merchants are contented to drift along, taking only the business that comes to them, without making an effort to increase their trade? The merchant who would increase his business should everlasting study the needs of the public, keeping himself well informed in regard to all the new and practical articles being introduced in the market; also keeping in view any novelties which will prove good sellers while they are new to the trade.

HE MUST ADVERTISE AND DISPLAY

these in a judicious manner, in order to find purchasers for them; for many articles in the Hardware line can be sold to people that take a fancy to them who otherwise would get along very well without them. There are luxuries in our line as well as in others, and less money in staple goods; but here good judgment should be exercised in buying. Small sample lots should first be procured to see how they will take with the trade. Should they prove poor sellers they can more easily be closed out and with very little loss.

KEEP A VARIED AND GOOD ASSORTMENT.

Don't let a customer leave your store with unsupplied wants—if you can help it. To be able to supply almost everything in demand will materially assist in increasing your business. It is possible to do this without filling your store with dead stock and you cannot sell goods unless you have them. You can close out unsalable goods by special sales in a way that may be advantageous.

KEEP YOUR STORE ATTRACTIVE,

so that your customers will want to come again. People are not afraid to enter a nice looking store, provided the right kind of a man is in it.

EMPLOY GOOD SALESMEN

and see that each customer is pleased as he goes out. A good salesman will earn his salary for himself and a dividend for his employer. He is worth more to you than four poor clerks at four times their salary. He will materially assist in increasing your business.

A good way to increase the cash receipts is to educate the trade to a

BETTER CLASS OF GOODS.

Push and advertise good goods; quality is remembered long after price is forgotten and people are proud possessors of things worth having. Selling good goods gives a man a good business reputation and helps to establish a high class trade. While there will always be a demand for a cheap grade of goods they are usually unsatisfactory and competition on them is keen. They pay a smaller percentage of profit and cost a greater percentage to handle, unless the volume of sales is large. Is the merchant benefited by selling the cheapest grades of goods? The customer usually condemns them after he has bought them and frequently returns them in an unsalable condition, with a demand that they be exchanged or the money refunded. The manufacturer disdains to take them back, having sold them on the strength of a low price. The dealer must either take the stuff back and stand the loss or lose a customer.

HANDLE CHEAP GOODS ALSO.

How many "cheap stores" have established a permanent and profitable business in your own town? Yet you must not discard cheap grades of goods entirely, else you might get the reputation of being a high priced man. To prevent the possibility of getting a reputation for high prices, keep a well assorted stock of "cheap goods" in the background and sell them cheaper than the cheapest when necessary, relying on the better grades for a reasonable profit. A merchant should always first offer the best of any article called for, and should that prove too expensive then show the next best, and so on down until he reaches the level of the customer's purse. This course will often result in the sale of a better article than the purchaser originally intended. There are exceptions, as when the customer knows just what he wants and asks for it, in which case if you are busy it is better not to detain him and to give him what he asks for.

GOOD ADVERTISING.

Another very important assistant in increasing your business is good advertising. Your local papers are, perhaps, the best medium through which to reach the trade. Engage a good space and change your advertisements regularly. I shall not attempt to tell you how to advertise, as the trade papers are filled with good suggestions regarding it. I know it pays, and the better the advertising the better it pays.

There is much more which might be said upon the subject, but a whole sermon on selling goods may be found in these few words: "Practice the Golden Rule in your business dealings with others." If you do this and are given a good location, proper ability, sufficient capital and a good character you cannot fail to increase your business.

A paper was then read by R. H. Suettinger of Two Rivers on "How I Do A CASH BUSINESS." This paper was printed in our last issue.

THE QUESTION BOX.

On motion the president appointed a committee, consisting of Mr. Nash of Centralia, Mr. McNamara of Janesville and Mr. Hughes of Fond du Lac, to make a selection of the questions that had been placed in the question box to be discussed by the members. They examined the questions and selected as suitable those which follow:

THE PRESIDENT: The first question before us is, "What ought the per cent. of expense be to the gross sales?" Are we going to hear any remarks upon this question?

THE SECRETARY: The next one is, "What should be the average per cent. of profits to the gross sales?" In order to get that before the meeting I will say I think 25 per cent. gross profits and 10 per cent. for expense is a fair average.

MR. SCHLAFFER: I think the matter of expense depends a great deal on the amount of business done. If a man sells \$25,000 a year he perhaps has facilities enough to sell \$50,000. While there is a certain amount of necessary expense it costs no more to sell \$50,000 than \$25,000. Now

in a poor year his expenses are almost as large in selling \$25,000 as \$50,000. I think it must be answered by the conditions of the year and the kind of business a man is doing. Five per cent. is as close as anybody can figure.

MR. KRONER: I don't think any man can do business on 5 per cent. I think a low estimate to make is 7½ per cent.

THE PRESIDENT: The next question—"What sizes and kind of Nails do you consider best for shingling?"

MR. SCHLAFFER: When Wire Nails first came out every carpenter bought Wire Lath Nails, 3-penny Nails, because they could drive them faster. For the last two years our sales of 4 penny Cut Nails have increased for shingling. Carpenters claim the 3-penny Wire Nails are the same size all through and they rust out near the head, while the 4-penny Cut Nail has twice the amount of material near the head than at the point and consequently will last twice as long. They also prefer Iron to Steel. They claim it lasts longer.

A MEMBER: I have found that by taking a 1¼ inch Wire Nail, made of No. 13 Wire, a Nail can be had for shingling which stands exposure and does not rust out. Many Nails of this kind have been sold in my vicinity made by a local Wire Nail company, and they have given perfect satisfaction. The body of the Nail must be heavy to make it last. A Wire Nail is as good as any other if it is equally heavy.

THE PRESIDENT: The next, "Ought retail dealers buy goods of jobbers or manufacturers who solicit or sell to the consumer?"

THE SECRETARY: I think any of us can answer that.

MR. NASH: I would ask if the Executive Committee has had much complaint in that respect, and if the jobbers as a general thing have been violating that rule? We have not heard any report from the Executive Committee in the way of complaints.

THE SECRETARY: There has been more complaint this year than there was the preceding year, perhaps because we have had a larger membership. There has been but one case that has not been satisfactorily adjusted, and I think that is in the way of an amicable adjustment. As far as I have met the manufacturers—I have not had a case in which they have not manifested a disposition apparently to be with us.

MR. NASH: I will state that I have had two cases. I have not been obliged to make a complaint to the Executive Committee, but I wrote to the jobbers direct and they stopped the trouble immediately.

THE PRESIDENT: The next, "Should we patronize our county and weekly papers while they advertise department stores?"

MR. DEWEY: Upon the question of jobbers selling to consumers it has come under the notice of the Hardware dealers in Kenosha that some of our farmers are listed in Bradstreet's and Dun's. This we traced by shipments of Milk Cans that are sent to a station outside of Wisconsin. We found that those Cans were shipped by jobbers to these farmers who are rated in Dun's and Bradstreet's. I think it would be wise for the association to take up this matter and have our secretary correspond with Dun's and Bradstreet's, and have them investigate and see that nothing but dealers are allowed to be rated in their books. I move that the secretary enter into correspondence with the mercantile agencies in regard to it.

THE SECRETARY: Will you incorporate in that that the retail dealers notify the secretary of any such farmers' addresses they know of?

The mover accepted the suggestion and the motion was carried.

THE PRESIDENT: Another question is, "If the parcel post should be incorporated would that not be harmful to the Hardwaremen?"

MR. SCHLAFFER: I think the establishment of a parcel post would be putting another club into the hands of the department stores to hit the dealers. They can now get to the consumers at a very nominal rate of expressage, and they will do just that much more business with a parcel post.

THE SECRETARY: Am just in receipt of this telegram

from Green Bay, Wis: "Make Green Bay your next meeting place. Will procure key to our city for you when you are here and entertain you in a royal manner. (Signed) Gottfredson Brothers Hardware Company."

The convention took a recess until 2 p.m.

REMARKS BY MANUFACTURERS AND JOBBERS.

At the Thursday afternoon session the president announced that the first thing on the programme would be reception and remarks by jobbers and manufacturers. He first called on William Lindsay of Lindsay Brothers.

MR. LINDSAY: Mr. President and Gentlemen: All I can say is that the jobbers and manufacturers are glad to meet this association, and hope you will be so well treated this time that you will want to come back again another year. I think the time can be better occupied than for me to make any extensive remarks.

THE PRESIDENT: We would like to hear C. G. Dennison of C. Sidney Shepard & Co. of Chicago.

MR. DENNISON: Mr. President, I don't know what subject you wish me to talk on. If you will kindly express a line in that direction I will be glad to respond. I just had a talk with Mr. Peck. Unfortunately it was on personal matters. We have been blacklisted by the Northwestern Association, for what reason I don't know, except that we enter into no combination with anybody either as to price between ourselves or others. So far as an organization of this kind is concerned, we are in thorough sympathy with all legitimate efforts that may be made by the retail Hardware dealers throughout the United States, but we do not want to be placed in an improper position and enter into obligations that might work to our disadvantage. The wholesale dealers of the United States, we might say, have almost blacklisted us because we have made our efforts with the retail dealers, and the retail dealers have blacklisted us in Minnesota because they think we have sold to department stores, and the department stores will not trade with us because they think we have not cheap enough goods; but as far as an organization of this kind is concerned we are in thorough sympathy with it, except that we do not wish to surrender our independence.

THE PRESIDENT: We would like to hear from J. W. Schatt of the New York Cutlery Company.

MR. SCHATT: Mr. President, in looking over this gathering of representative men this afternoon, I see you all appear to be very contented and feel at ease. I don't know of anything that can make you feel better than coming together once a year and meeting and talking over old times and comparing notes. I had the pleasure of being an invited guest last year before the Ohio State Hardware Association, and I assure you it was one of the most pleasant times that I can remember. The Hardwareman has it in his power, while he does not perhaps realize it, of making one of the most powerful organization that it is possible to make in this country. A resolution was passed in Ohio that they patronize no jobber or manufacturer who sells his product or goods to other than the Hardware trade—that is, to individuals or to consumers, or outside of the Hardware trade. That is a resolution, if it is lived up to, that will bring your trade back into the original channel where it belongs. I stand before you as a manufacturer of American pocket cutlery. Now, we have lots of good manufacturers of American cutlery. In fact, I don't know of a poor one. I think we American manufacturers of cutlery are all striving to make as good an article as we can in that line.

Mr. Schatt then went into the history of the manufacture of Pocket Knives in England, Germany and America, claiming that the American cutlery was superior to the imported goods.

THE PRESIDENT: We would like to hear from J. B. Champlin, the representative of the Cattaraugus Cutlery Company of Little Valley, N. Y.

Mr. Champlin said that he was one of the "fossil remains" of the traveling fraternity, as he was on the

road nearly continuously for over 46 years, but had reformed since. He gave a lengthy history of the manufacturing of Knives in the United States, and showed the advantage of the American cutlery over cutlery of German and English manufacture.

There were calls for John C. Koch of the John Pritzlaff Hardware Company of Milwaukee. Mr. Koch came forward, and said:

I have not come here to make a long speech, or attempt anything of the kind. I have no cutlery for sale, or goods to explain, but I feel greatly pleased to meet you gentlemen here and greet you and welcome you to Milwaukee. I hope you will have a good time here. I see all smiling faces, and no doubt it is the result of the good year's business behind you, and I hope we will have another good year before us. We have all made money and feel happy. I hope when we meet again next year that you will feel just as well and probably better than you do today. I hope these meetings will do lots of good in your coming here and getting acquainted with each other. I know nearly, or very nearly, most of you, as I have had business relations and correspondence more or less with all of you. I feel glad to meet you face to face and have a hearty handshake.

A paper followed by H. L. McNamara of Janesville on "THE RELATION OF TRAVELING MEN TO THE RETAILER." This paper was printed last week.

THE PRESIDENT: The next in order is a paper from Otto P. Schlafer of Appleton, on

The Retail Dealer Competing with the Jobber.

I expected to have but little to say at this meeting, but instead came here to listen to some of you who are better able to discuss some of the questions before us. Last week I received a short epistle from Brother Peck informing me that he thought it would be a nice idea for me to have a paper ready in case one of the speakers should fail to appear. However, he gave me no intimation of what he wanted me to speak on, for which I thank him; because your affliction might have been worse than it is now. As it is I will speak to you for a few minutes about a subject I feel much interested in, and I think perhaps most of you are, as it is, in my opinion, nearly as important as the department store question. It is the problem of the retail dealer competing with the jobber he buys from.

GRIEVANCES.

My duties as chairman of the Committee on Grievances have been very light during the past year, which goes to show that manufacturers and jobbers have in some measure tried to accede to the wishes of the retail dealers in not selling indiscriminately to those not strictly entitled to buy goods at wholesale prices. However, I think there is still room left for improvement in this direction. The resolutions adopted by the Northwestern Retail Dealers' Association regarding these points are not explicit enough in one respect and also too broad in another. They read as follows. (Mr. Schlafer read the resolutions and continued.)

In this matter we must and can afford to be liberal and to go slow in making our charges against the offenders. There are cases where one retailer orders goods for a friend of his in another city or town. The local dealer may see the goods arrive, marked, perhaps, from the jobber he is buying goods of to one of his customers. A great many cases of this kind are wrongfully laid up against the jobbers.

SELFISHNESS NOT MEANNESS.

We are inclined to be somewhat selfish in our business, and I think we have a right to be selfish in a degree, as it is selfishness that spurs on a man to do his best in business or in a profession. Without it he would be a laggard and would soon fall behind in the race for the goal of success; but when selfishness degenerates into coussed meanness it becomes the most detestable thing on earth. There is some similarity between the conditions

or feelings that exist between the jobber and retailer and those which exist between the employer and the employed or capital and labor, and also in a lesser degree, I think, between the manufacturer and jobber.

JOBBER'S AND RETAILERS' INTERESTS.

If our association can bring about the understanding between jobber and retailer that their interests are identical, that whatever hurts the retailer will eventually hurt also the jobber, it will accomplish enough to be worth the time and money we spend in the cause of the association.

You have all noticed at times the discontent of the employed with their employers, and how both their interests suffer unless their differences are speedily adjusted. It is nearly a parallel case between retailer and jobber. When the jobber is greedy enough to sell the consumer and then try to sell the retailer, to whom the consumer's trade rightfully belongs, it cannot be denied that he has a temporary advantage over the retailer.

Cases of this kind are of only too frequent occurrence to need special mention. It should be our aim to show the jobber in a friendly manner that his interests are best served by dealing with the retailer. We of course understand that in most instances where right and wrong are concerned the remedy must necessarily come from the stronger. It therefore behooves us to push along the good work of getting all dealers interested in the work and

TO JOIN OUR ASSOCIATION.

With all our forces united we are strong enough to assert our rights and to make our influence felt. By this I do not intend to say that we should lay down any rules for the jobbers to follow or abide by, but simply for them to grant us the courtesies we are entitled to and to try to follow the Golden Rule to do unto others as we would have them do unto us, or to remember the common business saying, "to live and let live."

We realize that the jobber has the right to conduct his business as he sees fit, and I would not ask to have that privilege taken from him; but when he sells direct to the consumer, the customer of the retailer, he violates a fundamental business principle and does not deserve our patronage.

I thank you for your kind attention and hope that when next we meet we shall be able to report a perfect understanding and harmony between all parties concerned in this movement.

Relation of Association and Jobbers.

THE PRESIDENT: Mr. Peck will have a word to say.

THE SECRETARY: The reports of the committees have yet to come in. You have not been burdened with reports. I want to suggest one or two things in regard to the relation between the association and jobbers. I would only name a case that has come under my observation this last year, and I trust that will start a train of thought that will bring some member to his feet who will give us his ideas. One is of a big house who had no dealer as a customer in a certain small town, but they had been selling a lumberman for years, and last year, in order to be in harmony with the association and to show their sympathy for the retail dealer, when this lumberman sent in a carload order for Nails, although we had no member in that town, they decided it would be contrary to the general policy of this association to fill his order. The consequence is they sold no goods in that town last year. The question comes up, were they justified in turning that order down or would they be justified in carrying out the policy of this association to this extent, that they would sell a man under those circumstances until complaint came and then act upon that?

MR. MONTGOMERY: As far as those questions are concerned, I feel that we ought to be grateful to the jobbers that we have been doing business with and feel they have done a great deal already for us. I have yet to find a single one of them that has taken an arbitrary course in this matter, and I think this association ought to recognize that they have done a good deal for us as an organization, and

I am willing to testify on the floor of this convention, as far as I am concerned, my individual gratitude for what they have done, and I know I voice the sentiments of a good many men here; and I think there is one thing as an association we ought to try and cultivate, and that is a spirit of charity. There are things that come up through the State that are sometimes reported by some dissatisfied dealer which upon investigation have been proved not just as they had been reported, and upon careful investigation of our Executive Committee it has been found in many instances that the jobber was to blame.

THE SECRETARY: Would you call a department store in a town of 1000 inhabitants a dealer who carried a line of dry goods, Hardware, and boots and shoes?

MR. MONTGOMERY: That is a question.

THE SECRETARY: If there was a Hardware store in that town?

MR. MONTGOMERY: That would depend somewhat on the surrounding country, I should think. I don't know. That is a question. Where are you going to draw the line?

MR. PECK: I think as an association we should draw the line closer than we have ever before.

MR. HUGHES of Fond du Lac: I would like to say that I have a grievance. I think that we are all agreed that express companies and telegraph companies do not pay any stamp tax, and I move that the secretary of this association write to each of our Wisconsin Senators and Members of Congress asking them to use their best endeavors to force them to pay their stamp tax. The motion was seconded and carried.

THE PRESIDENT: We will now hear the report of the Committee on Resolutions, Mr. Murdoch.

Mr. Murdoch read the resolutions as prepared by the committee, as follows:

Resolutions.

Resolved, That our association extend a vote of thanks to the members of the press for their courtesy in reporting our meeting, &c.

Resolved, That we tender a vote of thanks to the proprietor of the Republican House for courtesies shown in furnishing us a hall free of charge for our meeting.

Resolved, That we extend a vote of thanks to all who have solicited and forwarded the names of new members (especially J. C. Bump), thus increasing our working force; and that we earnestly solicit any traveling man or member to push this work wherever they can.

Resolved, That we thoroughly appreciate the efforts of the Nail manufacturers and jobbers to entertain us, and that we extend a vote of thanks to them for many courtesies.

Resolved, That we earnestly protest against any advance in freight as unfair and uncalled for, and that the officers of this association are hereby authorized to take this matter up as soon as possible with the proper parties, opposing it to the bitter end.

Resolved, That we oppose the enactment of any post law that would assist all department companies, and greatly retard and curtail the legitimate Hardware trade.

Resolved, That our next annual meeting be a three-day session, and in view of our growth that we request the Executive Committee to procure a larger hall that we now have for our meeting.

It was moved and seconded that they be adopted as a whole. Motion carried.

THE PRESIDENT: I believe that that concludes our programme. I would like to know if there is any further business that you desire to have brought before the association. If not, I sincerely thank you for the attention you have given this convention and the interest you have taken. My earnest wish is that we have gained some new thoughts and some good ideas that we may carry home with us, that will do us good for the coming year in our business. I also think each member of the association will do his best to increase its membership, and next year when we meet here we want a membership of 400.

THE SECRETARY: I find there are some questions yet in the Question Box. One of them is, "Who stands the loss when Stove Repairs come broken? What relief, if the dealer has to?"

THE PRESIDENT: Any remarks upon that subject?

A MEMBER: I find if the loss is claimed from the railroad company they refuse it, as the loss is too small. Sometimes the house stands the loss, but as a rule we Hardwaremen stand the loss.

A MEMBER: I have not had any trouble in collecting for Stove Repairs from the house I deal with, and I never had any trouble in getting a bill allowed for putting in repairs. If the dealer deals with the right kind of a house I don't think he will have any trouble in getting those repairs free.

THE PRESIDENT: It seems to me quite necessary that we have a committee to look after future State legislation that may affect us as Hardwaremen. Last year we had such a committee. What is your pleasure?

MR. McNAMARA: I move that a committee of three be appointed for that purpose. The motion was seconded and carried.

THE PRESIDENT: I will appoint upon that committee Mr. McNamara of Janesville, Mr. Montgomery of Wausau, Mr. Nash of Centralia and Mr. James of Richland Center.

On motion the convention adjourned *sine die*.

A. H. Sheldon.

The new president of the Wisconsin Association, A. H. Sheldon of Janesville, has been actively identified with the organization from its inception. He served last year as vice-president, and enters upon his duties as president with a full knowledge of the responsibilities of the office and its requirements, in order to make the work of the association a success. Mr. Sheldon has had a long and active business career, being now 60 years of age. He is a native of New York, having been born near Utica. He has resided in Wisconsin since 1858. For many years he was a traveling salesman, selling Agricultural Implements, afterward engaging in the manufacture of the same line of products in Janesville. In 1880 he engaged in the Hardware business, at first as a wholesale merchant, but of recent years has given his entire attention to the retail trade.

John Hessel.

The new vice-president, John Hessel of Antigo, was born in Manitowoc County, Wis., in 1856. Brought up on a farm, he learned the tinsmith and Hardware business with the firm of Vilas & Barnes of Manitowoc. In 1861 he embarked in business on his own account at Antigo, in partnership with Chas. S. Leykom. The firm were then and are now known as Hessel & Leykom.

C. A. Peck.

The re-election of C. A. Peck of Berlin as secretary was a foregone conclusion. Mr. Peck has endeavored on previous occasions as well as at this time to relinquish the arduous duties of the secretaryship in favor of some other member, but his associates have been unwilling to see his place filled by any one else. Their appreciation of his services is shown by the trebling of his salary for the coming year. Mr. Peck was born in Oneida County, N. Y., in 1839. It is a coincidence that the president and secretary are natives of the same county. He removed to Wisconsin in 1853, first living on a farm, then clerking in a grocery store. In 1863 he embarked in the Hardware business at Berlin on his own account and has continuously been in the same business in the same block. The business has been conducted under the name of C. A. Peck since 1877. He has four children, and his sons having been brought up under their father's direction are now intrusted with the practical management of the establishment.

H. J. Steinbach.

The new treasurer, H. J. Steinbach of Rice Lake, is a native of Wisconsin, having been born at Columbus in 1869. He has never been in any other line of trade than the Hardware business. He was first employed at St. Paul, and after serving there five years removed to Columbus, Wis., from which place he removed to Rice Lake in 1898 to engage in business on his own account.

NOTES OF THE CONVENTION.

The badge worn by the members was of neat design, gotten up by Secretary Peck. The principal feature of this badge was a large celluloid medallion bearing the Wisconsin coat of arms in colors. It was suspended by a broad blue silk ribbon from a top bar. On the ribbon was printed the name of the association in gilt letters, and the bar bore the word "Member."

The exhibits made by the manufacturers and jobbers at the Republican House were in notable instances of a most extensive and creditable character.

The largest display was that of Hibbard, Spencer, Bartlett & Co. of Chicago. They filled two rooms and a portion of a corridor in the most conspicuous part of the hotel with samples of a great variety of goods, especially of Cutlery and Sporting Goods. They gave much prominence to goods made particularly for their own house and sold under their own copyrighted trade-marks. The house are vigorously pushing some new lines, notably Sewing Machines and Paints and Oils. They are confidently looking forward to a sale of 20,000 Sewing Machines this year, solely through the Hardware trade. The Paint and Oil department also has made an excellent start, under the charge of a Paint expert. It is found that practically nine-tenths of the retail Hardware merchants now carry Paints as part of their stock. Among the exhibits were samples of their Chrysolite Enameled Ware, of which they control the entire factory output. An exhibit of this ware will be sent by Hibbard, Spencer, Bartlett & Co. to the Paris Exposition. They also showed a number of samples of their line of Bicycles. They find that the Bicycle trade is opening up most promisingly. The small makers of wheels having been compelled to drop out of the trade by low prices, a greater volume of business is coming to jobbers. The exhibit was in charge of Henry Beneke, assisted by J. P. Huggins of the Sewing Machine department, Wm. Church of the Paint department, Floyd Smith of the Cutlery department, J. G. Wright of the Sporting Goods department, and A. E. Winter and A. B. Blanks of the traveling force.

Lawrence Bros. of Sterling, Ill., represented by D. F. Isbell, exhibited Barn Door and Parlor Door Hangers and Rail and Strap and T Hinges.

The American Bicycle Company exhibited samples of Columbia, Hartford, Stormer, Stearns, Cleveland, Barnes, Syracuse, Viking and Niagara wheels. The company's representatives were D. W. Shattuck, Perry D. Gath and R. S. Baird.

A fine exhibit of Hardware specialties was made by J. W. Conchar of the Schreiber & Conchar Mfg. Company, Dubuque, Iowa. The company make an extensive line of specialties for the Hardware trade, but this exhibit consisted of new articles which the company have recently placed on the market. These comprised the B. O. E. (best on earth) Sad Irons of the Potts pattern, new styles of Hot Air Registers, the B. O. E. Stove Pipe Register and Ventilator, Barn Door Hangers, the Star Extension Jaw Anvil, Vise and Pipe Holder, with drill attachment; Star Stove Pipe Shelves, the Star Combination Farming Tool Bracket, which can be adjusted to different angles; Hawkeye Barn Door Latches, the Star Corn Sheller, the Comfort Stove Pipe Damper, which avoids the corrosion of Stove Pipe by creosote, and the Everlasting Cast Iron Chimney Cap.

An exhibit of Pocket Cutlery was made by the New York Cutlery Company of Gowanda, N. Y., represented by J. W. Schatt and E. Willard.

Another exhibit of Pocket Cutlery was made by the Cattaraugus Cutlery Company of Little Valley, N. Y., represented by J. B. F. Champlin and C. H. Pierson. Mr. Champlin caused his company to be permanently

remembered by the distribution of a handsome souvenir in the form of a pearl paper cutter and envelope opener, bearing the company's name in gilt letters.

Berry Bros. of Detroit, Mich., made an exhibit of Varnishes in charge of Frank McCall.

J. Retterer of Chicago exhibited samples of Glenwood Ranges and the Victor Oak Stove. The Glenwood Range has an oven thermometer, which indicates the heat of the oven by a dial plate on the outside of the oven door. The Victor Oak Stove attracted much attention by its handsome finish and special features, such as a self closing feed door and air tight draft Registers.

The William Resor & Co. of Cincinnati, represented by J. W. Torrence, showed a number of samples of their Monitor Stoves and Ranges. These comprised both Cast and Steel Ranges and several of their line of Heaters. The exhibit was extremely creditable, the goods shown having a specially artistic finish.

E. C. Atkins & Co., the saw manufacturers of Indianapolis, Ind., distributed large thermometers, bearing the name of the company, which by this time are doubtless indicating the temperature in numerous localities all over the State of Wisconsin. The company were represented by Julian W. Perkins, assistant secretary, and M. E. Rounds, who travels for the company in Wisconsin.

The following representatives of manufacturers and jobbers were also observed in attendance:

- C. G. Dennison, resident partner, of C. Sidney Shepard & Co., Chicago, and Richard H. McMahon and Jos. B. Shandler, traveling representatives.
- Chas. Lindemann of J. P. Lindemann & Sons, Milwaukee.
- Wm. F. Hyde of the Brand Stove Company, Milwaukee, Wis.
- W. H. Bliss of the Robinson Furnace Company, Chicago.
- Howard Bement, H. S. Bartholomew, W. H. Newbrough and Lee A. Smith of E. Bement's Sons, Lansing, Mich.
- M. Ledwidge, Milwaukee, of Follansbee Brothers Company, Pittsburgh, Pa.
- Henry Graft, Jr., of the Lalance & Grosjean Mfg. Company, Chicago.
- S. P. Harris of the A. C. Williams Sad Iron Works, Ravenna, Ohio.
- The Wilcox Mfg. Company, Aurora, Ill.
- Fred. C. Shays of the W. Dewees Wood Company, Pittsburgh, Pa.
- J. O. Becraft, Geo. T. Adams and T. W. Clybourne of the Estate of P. D. Beckwith, Dowagiac, Mich., manufacturers of Round Oak Stoves.
- C. A. Dager of Chicago, representing the Kearney & Foot Company and Geo. H. Bishop & Co.
- Geo. W. Trout, John D. Powell and W. C. Kunzman of Geo. W. Trout & Co., Chicago.
- Walter G. Voigt of the Berger Mfg. Company, Canton, Ohio.
- W. I. Norris of the Wheeling Corrugating Company, Chicago.
- N. H. Tighe of Black & Germer, Erie, Pa.
- H. S. Crane of the Fuller & Warren Company, Milwaukee.
- A. A. Babcock of the Smalley Mfg. Company, Manitowoc, Wis.
- Geo. Seeger and S. H. Corbett of Morley Brothers, Saginaw, Mich.
- W. M. Barnum of Morgan & Wright, Chicago.
- Henry M. Gay of the William Frankfurth Hardware Company, Milwaukee.
- J. C. Bump of the Eclipse Stove Company, Mansfield, Ohio.
- J. T. Treacy of the Patterson-Sargent Company, Chicago.
- A. J. Upham of the De Kalb Fence Company, De Kalb, Ill.
- D. A. Lewis, representative for Wisconsin and Michigan of the Rochester Stamping Company and Robeson Cutlery Company.

John J. Sinzich of Chicago, representing Geo. H. Bishop & Co.

The trade press was represented as follows:

The American Artisan, Daniel Stern and S. A. Johnston.
The Iron Age and *The Metal Worker*, Geo. W. Cope.

The following is a list of new members added from the city of Milwaukee:

John J. Jones, Vetter Bros., Dobl & Busse, Gust A. Rutter, Gavin Bros., Pflugradt Bros., Chas. Fritsch, Geskermann Bros., F. Drozniakiewicz, Her. Dietrich, Oscar Klug, G. Radatz & Co., Aug. Graunke, Wm. G. Grosjean, Robert Reinhold, Chas. Bruss & Co., Wm. F. Arndt, H. B. Bartelsen & Co., Oscar Richter.

Among the Hardware Trade.

Basche Hardware Company, Sumpter, Ore., have just completed a new building which is equipped with all the latest conveniences and is regarded as one of the finest stores in the State. They have also erected new warehouses. The company are wholesalers and retailers of Hardware, Stoves, Tinware, Iron, Steel, Mine and Mill Supplies, Plumbing Goods, &c. They state that the surrounding country is experiencing a great mining boom, consequently business is very good.

C. Higinbotham has purchased the stock of Hardware formerly carried by E. C. Vail in Le Roy, Kan.

Jackson & Newton are successors to O. B. Overholser, Kellerton, Iowa.

Poplar Ridge Hardware Company, Poplar Ridge, N. Y., have purchased the Hardware stocks of W. L. Pyle and J. F. King and will continue the business under the above style. The company consist of John F. King, Arthur Parsons and Charles Pyle.

J. D. Adkins is successor to Adkins & Son in the Hardware and Furniture business at English, Iowa.

J. D. Porter, Steubenville, Ohio, after having conducted the Hardware business at his present stand for the past 14 years, has purchased the business block formerly owned by the late Wm. R. Peters, where he successfully carried on the Hardware line for about 30 years. Mr. Porter states that he has enlarged, remodeled and improved this property and will on or about February 15 open up one of the largest assortments of all kinds of Builders', Contractors' and fine Shelf Hardware ever exhibited in that city.

Owing to the large increase in the volume of their business J. F. Barber & Co., Philipsburg, Pa., have found it necessary to erect a two-story brick warehouse, 50 x 90 feet in dimensions. The firm are wholesale and retail dealers in Shelf and Heavy Hardware, Stoves and Tinware, Mine Supplies, Glass, Paints, Oils, &c.

Smith Hardware Company, Hamilton, N. Y., have been incorporated with a capital stock of \$10,000. The company are continuing the business formerly conducted under the style of Adon N. Smith, Mr. Smith acting as manager.

Phillips & Day have succeeded Andrew G. Phillips, Morristown, N. J., in the wholesale and retail business in Hardware, Agricultural Implements, Sporting Goods, Seeds, Blacksmiths' Supplies, Lime, Cement, &c.

Downing & Campbell are successors to Sylvester & Linstrum, Westgate, Iowa.

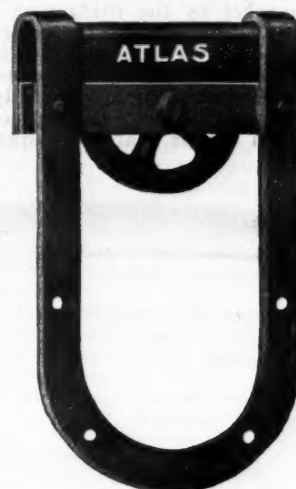
John Thistlewood has commenced business at Mounds, Pulaski County (post office Beechwood), Ill., carrying mostly Shelf Hardware, but also Stoves, Tinware, Wagons, Farm Implements, &c.

E. A. Crandall is successor to J. S. Sloan in the Hardware and Farm Implement business at Wyaconda, Mo.

Atlas Door Hanger.

The Stowell Mfg. & Foundry Company, South Milwaukee, Wis., have put on the market the door hanger shown herewith. It is ball bearing and has a sliding axle, which permits the axle to rise or fall with the door

to prevent the hanger jumping the track. The hanger is made of steel and is referred to as being very strong. It is finished in japan and the name of the hanger is sten-



Atlas Door Hanger.

ciled in gold bronze. It is made in 3, 4 and 5 inch sizes and numbered 3, 4 and 5.

The Perfection Mud Guard.

The illustrations here shown relate to a bicycle mud guard manufactured by the Perfection Mud Guard Com-



Fig. 1.—The Perfection Mud Guard.

pany, Indianapolis, Ind., for whom C. M. Avery, 161 Lake street, Chicago, Ill., is representative. In Fig. 1 the guard is shown and in Fig. 2 its application to the wheel of the



Fig. 2.—Perfection Mud Guard Applied.

bicycle. The design of the guard is to prevent the splashing of mud on the rider. Fig. 3 represents the guard



Fig. 3.—Operation of Perfection Mud Guard.

applied to front and rear wheel and shows the manner in which it accomplishes the purpose for which it is designed.

The Dunwall Gas Burner Plier.

The accompanying cut represents a gas burner plier, put on the market by the Bridgeport Mfg. Company, Bridgeport, Conn. The plier is forged from a high grade of sheet steel, the jaws being formed into a U shape, with a slight recess between the two parts. The teeth are milled, and the whole tool is carefully hardened and tempered to make a substantial and practically unbreakable tool, which it is stated is equal to the best

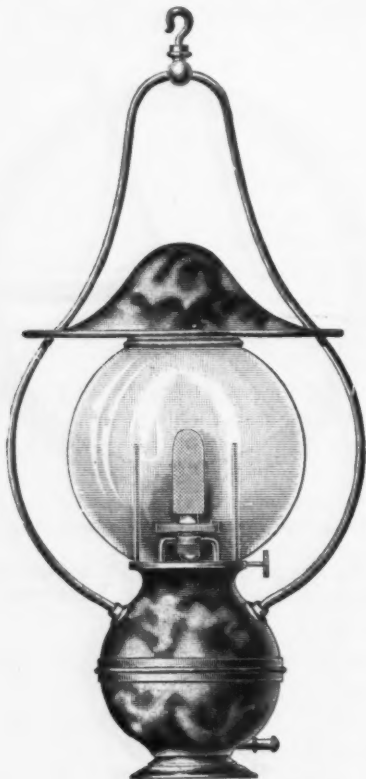


The Dunwall Gas Burner Plier.

forged plier. The makers explain that it has the advantage of drop forged gas pliers, being more evenly tempered and having a uniformly bright surface, while the price is proportionately lower.

The Metropolitan Search Light.

An illustration is given herewith of an incandescent lamp which has been recently brought out by the Metropolitan Daylight Lamp Company, 132 Lake street, Chicago. The lamp, it is remarked, generates its own gas from ordinary gasoline as fast as but no faster than necessary to produce light. The company state that their burner will generate perfectly in a freezing tem-



The Metropolitan Search Light.

perature, and that it can also be quickly taken apart so as to remove the sediment and corrosive accumulation of months of use. The illustration shows their search light, which is designed specially for lighting halls, stores, parks and other places requiring a very brilliant light. Several other styles of lamps are manufactured by the company.

The Coolidge Wrench.

The accompanying illustrations relate to a bit brace wrench put on the market by N. W. Farley & Co., Hancock, N. H. The wrench is made to fit any bit brace. The shell of the wrench is of sheer steel and the jaws of steel, while the tool is furnished in japan or nickel. It handles nuts and lag screws to 1 inch square. By pushing the thumb lug the jaws are opened, and by releasing the thumb lug the article placed in the jaws is held. Fig.

1 shows a nut within the jaws and Fig. 2 the manner of placing it there. The nut is picked up by the corners and the wrench takes it from the hand. The wrench will carry a nut, it is explained, without dropping it: let's go



Fig. 1.—The Coolidge Wrench.

by simply pulling away. It is also stated that it brings away the nut that has been unscrewed and drops it by a push on the thumb lug. Fig. 3 represents the wrench

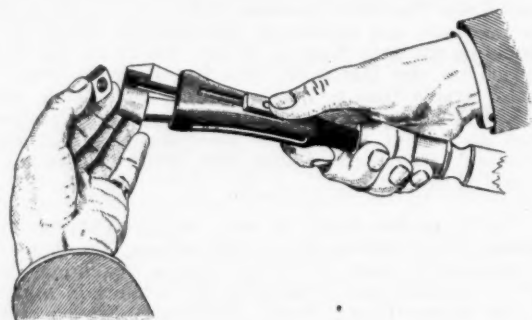


Fig. 2.—As Used for Nuts.

used with a lag screw, which, it is stated, it will carry in or out and drop it. The point is made that the harder the work the tighter the wrench holds. It is designed for



Fig. 3.—As Used for Lag Screws.

use by blacksmiths, mechanics, carpenters and by users of farming tools and wagons.

Herbrand Company, Fremont, Ohio, are manufacturing and selling at graded prices a line of drop forged bicycle wrenches numbered 2, 3, 5 and 6. No. 2 Eureka and No. 3 Herbrand are forged from bar steel specially prepared for the purpose. No. 5 is a telescope wrench and is referred to as their most expensive wrench, No. 6 being their best low priced wrench. All are drop forged from bar steel and have tempered jaws, it is said.

Current Hardware Prices.

REVISED FEBRUARY 13, 1900.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Cut Prices.—In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, $\frac{1}{2}$ doz. \$3.00... 33 $\frac{1}{2}$ @33 $\frac{1}{2}$ @10 $\frac{1}{2}$
North's... 10 $\frac{1}{2}$
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent... 25 $\frac{1}{2}$ @5 $\frac{1}{2}$
Taplin's Perfection... 50 $\frac{1}{2}$

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvil... 7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @
Eagles Brand, Wrought... 9 $\frac{1}{2}$ @9 $\frac{1}{2}$ @
Barnes brand, Wrought... 9 $\frac{1}{2}$ @9 $\frac{1}{2}$ @
Samson... 7 $\frac{1}{2}$ @7 $\frac{1}{2}$ @
Trenton, Wrought... 8 $\frac{1}{2}$ @8 $\frac{1}{2}$ @

Imported—

Armstrong's Mouse Hole... 8 $\frac{1}{2}$ @9 $\frac{1}{2}$ @
Peter Wright's... 9 $\frac{1}{2}$ @9 $\frac{1}{2}$ @

Anvil, Vise and Drill—

Millers Falls Co., \$18.00... 20 $\frac{1}{2}$

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Common Double Spur... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$
Boring Machine Augers... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

Car Bits, 12-in. twist... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$
Jennings' Pattern... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

Auger Bits... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$
Ford's Auger and Car Bits... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

Forster Pat. Auger Bits... 25 $\frac{1}{2}$ @
C. E. Jennings & Co... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

No. 10 ext. lip. R. Jennings' list... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

No. 30. R. Jennings' list... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @10 $\frac{1}{2}$

Russell Jennings... 25 $\frac{1}{2}$ @
L'Hommedieu Car Bits... 15 $\frac{1}{2}$ @10 $\frac{1}{2}$ @15 $\frac{1}{2}$ @10 $\frac{1}{2}$

Puga's Black... 20 $\frac{1}{2}$ @
Puga's Jennings' Pattern... 35 $\frac{1}{2}$ @

Snell's Auger Bits... 60 $\frac{1}{2}$ @
Snell's Bell Hang-ra Bits... 50 $\frac{1}{2}$ @

Snell's Car Bits, 12-in. twist... 60 $\frac{1}{2}$ @
Wright's Jennings Bits (R. Jennings' list)... 50 $\frac{1}{2}$ @

Bit Stock Drills—

Standard list... 65 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$

Clark's small, \$18; large, \$26... 60 $\frac{1}{2}$ @

Lavigne's Clark's Pattern, No. 1... 60 $\frac{1}{2}$ @

doz. \$26; No. 2, \$18... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Steele's No. 1, \$26; No. 2, \$18... 40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @

Swan's... 40 $\frac{1}{2}$ @

Gimlet Bits—

Common Double Cut... gro. \$2.75@3.25

German Pattern... gro. \$5.00@5.50

Double Cut, makers' lists... 50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @

Hollow Augers—

Ames... 25 $\frac{1}{2}$ @10 $\frac{1}{2}$

Booney's Adjustable, $\frac{1}{2}$ doz... \$18.00

New Patent... 25 $\frac{1}{2}$ @10 $\frac{1}{2}$

Universal... 20 $\frac{1}{2}$ @

Ship Augers and Bits—

Ford's... 40 $\frac{1}{2}$ @

Snell's... 40 $\frac{1}{2}$ @

L'Hommedieu's... 15 $\frac{1}{2}$ @10 $\frac{1}{2}$ @15 $\frac{1}{2}$ @10 $\frac{1}{2}$

Watrous'... 40 $\frac{1}{2}$ @40 $\frac{1}{2}$ @

Awl Hafts, See Hafts, Awl.

Awls—

Handled... gro. \$2.75@3.10

Unhandled, Shouldered... gro. \$5.00@5.50

Unhandled, Patent... gro. 60 $\frac{1}{2}$ @70 $\frac{1}{2}$

Pg Awls:

Unhandled, Patent... gro. 31 $\frac{1}{2}$ @34 $\frac{1}{2}$

Unhandled, Shouldered... gro. 60 $\frac{1}{2}$ @70 $\frac{1}{2}$

Scratch Awls:

Handled, Common... gro. \$3.50@4.00

Handled, Socket... gro. \$11.50@12.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First Quality, best brands... \$6.00@6.25

First Quality, other brands... \$5.50@5.75

Jobbers' Special Brands:

Good Quality... \$5.25@5.50

Best Quality... \$6.00@6.50

Cheap, Handled Axes... \$5.00@5.50

Beveled, add 25c doz.

Axle Grease—See Grease, Axle.

Axles—

Concord, loose collar... 6 $\frac{1}{2}$ @6 $\frac{1}{2}$ @

Concord, solid collar... 6 $\frac{1}{2}$ @6 $\frac{1}{2}$ @

No. 1 Common... 5 $\frac{1}{2}$ @5 $\frac{1}{2}$ @

No. 1 $\frac{1}{2}$ Com. New Style... 5 $\frac{1}{2}$ @5 $\frac{1}{2}$ @

No. 2 Solid Collar... 5 $\frac{1}{2}$ @5 $\frac{1}{2}$ @

Nos. 7, 8, 11 to 14... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Nos. 7, 8, 11 to 14, 100 sets... 60 $\frac{1}{2}$ @

Nos. 15 to 18... 60 $\frac{1}{2}$ @

Nos. 19 to 22... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$

Boxes, Axle—

Common and Concord, not turned... lb. 50

Common and Concord, turned... lb. 50

Half Patent... lb. 50

Balances—

Caldwell new list... 50 $\frac{1}{2}$ @

Pullman's... 50 $\frac{1}{2}$ @

Spring—

Spring Balances... 50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @

Chatillon's Light Spz. Balances... 40 $\frac{1}{2}$ @10 $\frac{1}{2}$

Chatillon Straight Balances... 40 $\frac{1}{2}$ @

Chatillon Circular Balances... 50 $\frac{1}{2}$ @

Chatillon's... 30 $\frac{1}{2}$ @

Barb Wire—See Wire, Barb.

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb... 4@4 $\frac{1}{2}$ @

Beams, Scale—

Scale Beams, list Jan. 12, '83... 30 $\frac{1}{2}$ @50 $\frac{1}{2}$ @

Chatillon's No. 1... 40 $\frac{1}{2}$ @

Chatillon's No. 2... 40 $\frac{1}{2}$ @

Beaters—Egg—

Standard Co... No. 5 Steel Handle Dover... gro. \$6.50

No. 10 Cast Handle Dover... gro. \$8.00

No. 10 Steel Handle Dover... gro. \$8.00

No. 15 Extra Heavy Steel Handle... gro. \$15.00

Ritval, $\frac{1}{2}$ gro... \$10.00

Taplin Mfg. Co... No. 50 Small Family size... gro. \$6.50

No. 100 Regul. Family size... \$8.00

No. 102 Regul. Family size, tinned... \$9.50

No. 150 Large Family size... \$12.00

No. 152 Large Family size, tinned... \$17.00

Lyon's Standard... \$1.75

Wonder (S. S. & Co.)... gro. \$7.50

Bellows—

Blacksmith—

Standard list... 70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @

Inch... 30 32 34 36 38 40

Eac... \$3.70 3.95 4.25 4.50 4.75 5.00

Extra Length: Each... \$4.25 4.50 4.75 5.00 5.25 5.50

Molders—

Inch... 9 10 11 12 14 16

Doz... \$6.75 7.25 8.50 9.50 12.00 14.50

Hand—

Inch... 6 7 8 9 10 12

Doz... \$3.75 4.25 4.50 5.00 5.75 6.75

Bells—Cow—

Ordinary goods... 75 $\frac{1}{2}$ @10 $\frac{1}{2}$

High grade... 70 $\frac{1}{2}$ @10 $\frac{1}{2}$

Jersey... 75 $\frac{1}{2}$ @10 $\frac{1}{2}$

Texas Star... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Door—

Gong, Yankee... 55 $\frac{1}{2}$ @

Houe, R. & E. Mfg. Co's... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Lever and Pull, Sargent's... 33 $\frac{1}{2}$ @10 $\frac{1}{2}$

Hand—

Hand Bells, Polished... 65 $\frac{1}{2}$ @65 $\frac{1}{2}$ @10 $\frac{1}{2}$

White Metal... 65 $\frac{1}{2}$ @65 $\frac{1}{2}$ @10 $\frac{1}{2}$

Nickel Plated... 50 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Swiss... 60 $\frac{1}{2}$ @60 $\frac{1}{2}$ @10 $\frac{1}{2}$

Miscellaneous—

Farm Bells... lb. 2@3 $\frac{1}{2}$ @

Steel Alloy Church and School... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Wilmet & Hobbs Mfg. Co., Gong... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @

Belting Rubber—

Common Standard... 70 $\frac{1}{2}$ @10 $\frac{1}{2}$ @75 $\frac{1}{2}$ @

Standard... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$ @

Extra... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$ @

High Grade... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$ @

Leather—

Extra Heavy, Short Lap... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$ @50 $\frac{1}{2}$ @

Regular Short Lap... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @60 $\frac{1}{2}$ @

Standard... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @60 $\frac{1}{2}$ @

Light Standard... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$ @70 $\frac{1}{2}$ @

Cotton—

Rossendale-Reddaway B. & H. Co... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$

Sphinx Brand... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$

Durable Brand... 70 $\frac{1}{2}$ @

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters... 30 $\frac{1}{2}$ @

Ill. Iron & Bolt Co... 40 $\frac{1}{2}$ @5 $\frac{1}{2}$

Stoddard's Lightning Tire Upsetters... 40 $\frac{1}{2}$ @50 $\frac{1}{2}$

Bicycle Goods—

Lane's Cycle Hanger... 33 $\frac{1}{2}$ @5 $\frac{1}{2}$

John S. Leng's Son's 1899 list: Chain... 50 $\frac{1}{2}$ @

Parts... 50 $\frac{1}{2}$ @

Spokes... 50 $\frac{1}{2}$ @

Tub... 60 $\frac{1}{2}$ @

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—Tackle—

Common Wooden... 70 $\frac{1}{2}$ @70 $\frac{1}{2}$ @10 $\frac{1}{2}$

Eddy's steel... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$

Hartz Steel... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Ford's Star Brand Self Lubricating... 60 $\frac{1}{2}$ @10 $\frac{1}{2}$

Hollow Steel, Ford's Pat. Star Brand... 50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Lane's Patent Automatic Lock and Junior... 30 $\frac{1}{2}$ @

Stowell's Novelty, Mal. Iron... 50 $\frac{1}{2}$ @

See also Machines, Hoisting.

Boards, Stove—

1899 List: Zinc... 30 $\frac{1}{2}$ @

Crystal and Embossed... 40 $\frac{1}{2}$ @

Boils—

Carriage, Machine, &c.—

Common, list Jan. 30, '95... 45 $\frac{1}{2}$ @50 $\frac{1}{2}$ @10 $\frac{1}{2}$

Norway Iron, \$3.00, list Oct. 7, '84... 75 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10 $\frac{1}{2}$

Phila. Eagle, \$3.00 list... 75 $\frac{1}{2}$ @10 $\frac{1}{2}$ @75 $\frac{1}{2}$ @10 $\frac{1}{2}$

Boil Ends, list Jan. 30, '95... 50 $\frac{1}{2}$ @5

B. L. Caps (Sturtevant Shells) \$1.00
All other primers \$1.10 @ \$1.15

Carpet Stretchers— See Stretchers, Carpet.

Cartridges—

B. B. Caps, Con., Ball Sngl. \$1.00
B. B. Caps, Round Ball \$1.10 @ \$1.15
Blank Cartridges:
38 C. F., \$5.50 10c @ 5c
38 C. F., \$7.00 10c @ 5c
38 cal. Rim, \$1.80 10c @ 5c
38 cal. Rim, \$2.75 10c @ 5c
Central Fire 35c
Pistol and Rifle 15c @ 5c
Primed S&W and Bullets 15c @ 5c
Rim Fire Sporting 50c
Rim Fire, Military 15c @ 5c

Casters—

Red 60c @ 10c
Flat 60c @ 10c
Plate, part Brass 60c @ 10c
Philadelphia 60c @ 10c
Boss 70c @ 10c
Loss nil-Friction 70c @ 10c
Martin's Patent (Phoenix) 45c
Payson's Anti-Friction Furniture 70c @ 10c
Payson's Anti-Friction Truck 70c @ 10c
Standard Ball Bearing 45c
Tucker's Patent, low list 50c

Cattle Leaders— See Leaders, Cattle.

Chain—

American Coil, Full Casks:
3-16 1/4 5-16 3/4 7-16 1/2 9-16 3/4
8-16 5/8 5-8 5-8 6-8 4-8 4-7 4-6 5/8
1/4 3/4 1 inch
4-55 4-60 4-65 4-70 casks per lb.
Less than Cask lots add 1/4 @ 1/2 per lb.
German Coil, list July 24, '97 60c @ 10c @ 10c @ 10c
German Hatter Chain, list July 24, '97 60c @ 10c @ 10c @ 10c
Trace, Wagon and Fancy Chains, list April, '98 50c @ 10c @ 10c @ 10c
Jack Chain, list July 10, '98 50c @ 10c @ 10c @ 10c

Iron 60c @ 5c @ 60c
Brass 60c @ 5c @ 60c
Gal. Pump Chain 5/4 @ 5/4 c
Great, Hitching and Rein Chains
Covert Mfg. Co.:
Braid 35c @ 2c
Halter 35c @ 2c
Heel 35c @ 2c
Klein 35c @ 2c
Stallion 35c @ 2c
Onedra Community:
Eureka Coil and Halter 60c @ 10c @ 5c
Niagara Coil and Halter 60c @ 10c @ 5c
Niagara Cow Ties 45c @ 5c @ 45c @ 5c
Am. Coil and Halters 50c @ 10c @ 5c @ 5c
Am. Cow Ties 35c @ 5c @ 40c @ 5c
Wire Goods Co.:
Dog Chain 60c
Universal Dbl-Jointed Chain 45c

Chalk—(From Jobbers.)

Carpenters', Blue 60c @ 10c
Carpenters', Red 60c @ 10c
Carpenters', White 60c @ 10c
See also Crayons.

Chalk Lines—See Lines.

Checks, Door—

Bardsley's 40c @ 10c
Columbia 40c @ 10c
Eclipse 60c @ 10c @ 10c

Chisels—

Socket Framing and Firmer
Standard List 70c @ 5c @ 70c @ 10c @ 5c
Buck Bros. 30c
Charles Buck 30c
Swan's 70c @ 10c @ 5c
L. & L. J. White 30c @ 30c @ 5c

Tanged—

Tanged Firmers 40c @ 5c @ 40c @ 10c
Buck Bros. 30c
Charles Buck 30c
L. & L. J. White, Tanged 35c @ 5c

Cold—

Cold Chisels, good quality, lb. 14c @ 16c
Cold Chisels, fair quality, lb. 12c
Cold Chisels, ordinary, lb. 9c @ 9c

Chucks—

Beach Pat., each \$3.00 20c
Skinner Patent Chucks:
Combination Lathe Chucks 40c
Drill Chucks, Patent and Standard 30c
Drill Chucks, New Model 30c
Independent Lathe Chucks 40c
Improved Planer Chucks 40c
Universal Lathe Chucks 40c
Face Plate Jaws 35c
Union Mfg. Co.:
Combination 40c
Car Drill 30c
Geared Scroll 30c
Independent 40c
Union Drill 30c
Universal 40c
Face Plate Jaws 35c

Clamps—

Adjustable, Hammer's 20c @ 30c @ 5c
Adjustable, Stearns' 30c
Cabinet, Sargent's 45c @ 10c
Carriage Makers', P., S. & W. Co. 40c @ 10c
Carriage Makers', Sargent's 50c @ 10c
Best, Parallel 30c @ 10c
Linesman's Grip, Drop Forge & Tool Co. 40c
Saw Clamps, see Vises, Saw Filers.

Cleaners, Walk—

Star Socket, All Steel 70c @ 4.00 net
Star Shank, All Steel 70c @ 3.75 net

Cleavers, Butchers'—

Foster Bros. 30c
New Haven Edge Tool Co.'s 40c @ 40c @ 5c
Nichols Bros., Flat 41, 30c; Rd. hdl., 40c
Fayette R. Plumb 5c
P., S. & W. 30c @ 50c @ 50c @ 10c
& L. J. White 35c

Clippers—

Chicago Flexible Shaft Company
Handy Toilet 70c @ 7.20

Mascotte Toilet 70c @ 8.40
Monitor Toilet 70c @ 9.00
Stewart's Patent 70c @ 10.00

Clips, Axle—

Eagle and Superior 1/4 and 5-16 inch 65c @ 10c @ 70c
Norway, 1/4 and 5-16 inch 65c @ 10c @ 70c

Cloth and Netting, Wire— See Wire, &c.

Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) 60c @ 10c @ 10c @ 10c

Coffee Mills—See Mills, Coffee.

Collars Dog—

Brass, Pope & Stevens' list 40c
Embossed, Gilt, Pope & Stevens' list 40c @ 10c
Leather, Pope & Stevens' list 40c @ 10c

Compasses, Dividers, &c.

Ordinary Goods 70c @ 10c @ 75c
Bemis & Call Hdw. & Tool Co.:
Dividers 65c
Callipers, Call's Patent Inside 55c
Callipers, Double 65c
Callipers, Inside or Outside 65c
Callipers, Wing 65c
Compasses 50c
J. Stevens & T. Co. 35c @ 10c

Conductor Pipe, Galvanized—

Territory, Carload, L. C. L. Need.
Eastern 60c @ 25c @ 25c @ 25c
Central 60c @ 25c @ 25c @ 25c
Southern 60c @ 25c @ 25c @ 25c
S. Western 60c @ 25c @ 25c @ 25c
Terms, 2% for cash.
See also Eave Trough.

Coolers, Water—

S. S. & Co.: 2-gal., \$14.00; 3-gal., \$16.00; 4-gal., \$18.50; 6-gal., \$23.00.

Coopers' Tools— See Tools, Coopers'.

Cord— Sash—

Braided, Drab 1b. 22c @ 25c
Braided, White, Common 1b. 16c @ 18c
Cable Laid Italian 1b. A, 18c; B, 16c
Common India 1b. 8c @ 9c @ 9c
Cotton Sash Cord, Twisted 1b. 12c @ 18c
Patent Russia 1b. 12c @ 18c
Cable Laid Russia 1b. 12c @ 18c
India Hemp, Braided 1b. 10c @ 15c
Patent India 1b. 10c @ 12c
Pearl Braided, cotton 1b. 10c @ 12c
Massachusetts, White 1b. 20c @ 24c
Massachusetts, D. ab. 1b. 24c @ 28c
Eddystone Braided Cotton 1b. 18c @ 22c
Harmony Cable Laid Italian 1b. 18c @ 22c
Ossawa Mills:
Crown, Solid Braided White 1b. 18c @ 22c
Braided, Giant, White 1b. 17c @ 21c
Peerless:
Cable Laid Russian 1b. 16c @ 18c
Cable Laid India 1b. 12c @ 14c
Braided India 1b. 18c @ 22c
Phoenix, White 1b. 18c @ 22c
Samson:
Braided, Drab Cotton 1b. 31c @ 35c
Braided, Italian Hemp 1b. 31c @ 35c
Braided, Linen 1b. 44c @ 48c
Braided, White Cotton, Spot 1b. 27c @ 31c
Silver Lake:
A quality, Drab, 40c 15c
A quality, White, 35c 15c
B quality, Drab, 35c 15c
B quality, White, 30c 15c
Italian Hemp, 40c 15c
Linen, 57c 15c

Wire, Picture—

Braided or Twisted 70c @ 70c @ 5c

Corn Knives and Cutters— See Knives, Corn.

Crackers, Nut—

Little Inn 70c @ 24.00
Turner & Seymour Mfg. Co. 50c

Cradles—

Grain 60c

Crayons—

White Round Crayons, gross 5c @ 6c
Cases, 100 gro., \$1.50 @ \$5.00, at factory.

Metal Workers' Crayons, gr. \$2.50 @ 25c
Soapstone Pencils, round, flat or square, gr. \$1.50 @ 25c
Rolling Mill Crayons, gr. \$2.50 @ 25c
Railroad Crayons (composition), gr. \$3.00 @ 25c

See also Chalk.

Creamery Pails—See Pails, Creamery.

Crooks, Shepherds'—

Port Madison, Heavy 70c @ 7.00
Port Madison, Light 70c @ 6.50

Crow Bars—See Bars, Crow.

Cultivators—

Victor Garden 70c @ 10.00

Cutters—Glass—

Smith & Hemmway Co. 30c

Meat—

American 1 2 3 4 5 30c
Nos. 1 2 3 4 5 30c
Each \$5 \$7 \$10 \$25 \$50 \$80
Connecticut:
Nos. 1 2 3 4 5 10 12
Each \$1.75 2.25 3.00 3.00 3.50
Enterprise 25c @ 25c @ 7c @ 7c
Nos. 5 10 12 22 32
Each \$2 \$3 \$2.50 \$4 \$6
Dixon's 70c @ 10c @ 33c @ 10c
Nos. 1 2 3 4 5
Each \$14.00 \$17.00 \$19.00 \$30.00
Hale's 70c @ 10c @ 10c @ 10c @ 10c
Nos. 1 2 3 4 5
Each \$27.00 \$33.00 \$45.00
Home No. 1, 70c @ 30.00 @ 60c
Little Giant, 70c @ 33c @ 35c @ 55c
Nos. 305 310 312 314 322
\$35.00 \$45.00 \$44.00 \$72.00 \$85.00

Miles' Challenge, 70c @ 45c @ 10c
Nos. 1 2 3
\$22.00 \$30.00 \$40.00
New Triumph No. 605, 70c @ 24.00 @ 30c @ 35c

Woodruff's, 70c @ 40c

Nos. 100 150
\$15.00 \$18.00
Chadborn's Smoked Beef Cutter, 70c @ 60.00

Enterprise Beef Shavers 25c @ 30c

Slaw and Kraut—

Henry Dies and Sons:
Slaw, C. Rn Grater, &c. 40c
Kraut Cutters 24 x 7, 26 x 8, 30 x 9, 55c
Kraut Cutters 36 x 12, 40 x 12 40c
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40c
Slaw Cutters, 1 Knife, 70c @ 18c @ 20c
Slaw Cutters, 2 Knife, 70c @ 22c @ 26c

Tobacco—

All Iron, Cheap 70c @ 45c @ 45c @ 50c
Enterprise 25c @ 30c
National, 70c @ 21.00 @ 22.00 @ 10c
Sargent's, 70c @ 24.00 @ 60c @ 60c @ 10c

Washer—

Appleton's, 70c @ 16.00 @ 60c @ 10c @ 10c @ 10c
Bonney's 60c @ 10c @ 10c @ 10c @ 10c @ 10c
70c @ 4.75

Diggers, Post Hole, &c.—

Dalby P. at Hole Auger, per doz. \$10.00
Iwan's Improved Post Hole Auger 40c
Iwan's Perfection Post Hole Digger 70c @ 10.00
Never-Break Post Hole Diggers, 70c @ 24.00
Samson, 70c @ 34.00 @ 25c

Dividers—See Compasses.

Dog Collars—See Collars, Dog.

Door Checks— See Checks, Door.

Door Springs— See Springs, Door.

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, 70c @ 18c
Nos. 2, 3, 4, 5; No. 3, 14c; No. 4, 18c.

Drawing Knives— See Knives, Drawing.

Drills and Drill Stocks—

Common Blacksmiths' Drill, each \$1.75 @ \$2.00

Blacksmiths' Self-feeding, each \$5.75 @ 4.00

Bench Drills, Stearns' 50c
Breast, Millers Falls, each \$3.00 15c @ 10c
Breast, P. S. & W. 30c @ 30c @ 10c
Goodell Automatic Drills 40c @ 5c @ 40c @ 10c
Ratchet, Curtis & Curtis 25c
Ratchet, Parker's 40c
Ratchet, Weston's 20c @ 25c
Ratchet, Whitney's, P. S. & W. 40c @ 10c
Whitney's Hand Drill, No. 1, \$10.00;
Adjustable, No. 10, \$12.00, 83c @ 75c

Twist Drills—

Standard List 65c @ 65c @ 10c

Drill Bits or Bit Stock

Drills—See Augers and Bits.

Drill Chucks—See Chucks.

Dripping Pans— See Pans, Dripping.

Drivers, Screw—

Balsey's Screw Holder and Driver, 70c @ 2c @ 10c, 4-in., \$1.40
Buck Bros. 30c
Buck Bros' Screw Driver Bits 37c @ 30c
Champion 40c @ 10c
Douglas Mfg. Co. 20c @ 20c @ 10c
Fray's Hol. H'dle Sets, No. 3, \$12.00 50c
Gay & Parsons' Ratchet 35c
Goodell's Automatic 50c @ 10c @ 50c @ 10c @ 10c @ 5c
Mayhew's Black Handle 50c
Mayhew's Monarch 45c @ 10c
New England Specialty Co. 50c @ 10c
Sargent & Co.'s:
Nos. 1, 50c and 60.50 @ 10c @ 50c @ 10c @ 10c
Nos. 20 and 40 60c @ 60c @ 10c
Screw Driver Bits 70c @ 50c @ 70c
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles 60c @ 10c
No. 86 70c @ 10c
Swan's:
Nos. 65 to 68 50c
No. 40 40c @ 10c
Nos. 25, 35 and 43 30c @ 10c @ 10c

Eave Trough, Galvanized

Territory, Carload, L. C. L. Need.
Eastern 75c @ 15c 75c @ 10c
Central 75c @ 12c 75c @ 7c @ 5c
Southern 75c @ 10c 75c @ 5c
S. Western 75c @ 2c @ 5c
Terms, 2% for cash.
See also Conductor Pipe.

Egg Beaters—See Beaters, Egg.

Egg Openers— See Openers, Egg.

Emery—Nos. 4 to 54 to Flour, CF

Kegs 1b. gro. 1.80 gro. F.F.F.
1/4 Kegs 1b. 4c 5c 3c
1/4 Kegs 1b. 4c 5c 3c
10-lb cans, 10 6c 6c 5c
10-lb cans, less than 10 30c 30c 8c

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins— See Pins, Escutcheon.

Extractors, Lemon Juice— See Squeezers, Lemon.

Fasteners, Blind—

Zimmerman's 50c @ 10c

Faucets—

Cork Lined 70c @ 5c @ 70c @ 10c @ 5c
Metallic Key, Leather Lined 70c @ 70c @ 10c
Red Cedar 60c @ 50c @ 5c

B. & L. B. Co.: West's Lock, Open and Shut Key 50c @ 10c John Sommer's Peerless Tin Key 40c John Sommer's Boss Tin Key 50c John Sommer's Victor Metal Key 50c @ 10c John Sommer's Duplex Metal Key 60c John Sommer's Diamond Lock 40c @ 40c @ 5c John Sommer's L. X. L. Cork Lined 50c John Sommer's Reliable Cork Lined 50c @ 10c

John Sommer's Common Cork Lined 70c
John Sommer's Chicago Cork Lined 70c
John Sommer's O. K. Cork Lined 50c
John Sommer's Perfection Cedar 40c
Star Metal Plug new list 60c @ 60c @ 5c
Star Metal Plug reduced list 60c @ 5c
Lockport, Metal Plug, reduced list 60c @ 5c
Self Measuring:
Enterprise, 70c @ 36.00 40c
Lane's, 70c @ 36.00 40c
National Measuring, 70c @ 36.00 40c

Felloe Plates— See Plates, Felloe.

Files—Domestic— List revised Nov. 1, 1899.

Best Brands 70c @ 70c
Good Brands 75c @ 75c @ 10c @ 5c
Fair Brands 75c @ 10c @ 80c @ 5c
Second Quality 80c @ 10c @ 80c @ 5c

Imported—

Stubs' Tapers, Stubs' list, July 24, '97 50c @ 10c @ 5c

Fixtures, Grindstone—

Net Prices:
Inch 15 17 19 21 24
Per doz. \$5.30 \$5.55 3.75 4.50 5.25
Stowell's Giant Grindstone Hanger 70c @ 20.00
Stowell's Grindstone Fixtures 50c
P. S. & W. Co. 50c @ 10c @ 5c
Reading Hardware Co. 30c @ 20c @ 10c
Sargent's Patent 60c @ 10c @ 60c @ 10c

Fluting Machines— See Machines, Fluting.

Fodder Squeezers— See Squeezers, Fodder.

Forks—

Aug. 1, 1899, list.
Hay, 2 tine 65c
Hay, 3 tine 65c @ 5c
Manure, 4 tine 70c
Manure, 5 and 6 tine 70c
Spading 70c @ 5c
Iowa Dig-Ezy Potato 65c
Victor, Hay 70c
Victor, Manure 70c @ 5c
Victor, Header 70c @ 12c @ 5c
Champion, Hay 60c @ 20c
Champion, Manure 70c @ 5c
Columbia, Hay 65c @ 5c
Columbia, Manure 70c @ 5c
Columbia, Spading 70c @ 10c
Hawkeye Wood Barley 4 tine 70c @ 5c
\$5.00; 6 tine \$6.00.
Plated—See Spoons.

Frames—

Saw—
Red, Polished and Varnished, doz. \$1.15 @ \$1.30
White 75c @ 30c

Screens and Frames— See Screens.

Freezers, Ice Cream—

Qts. 2 3 4 6 8 10
Best \$1.40 1.60 1.85 2.20 2.50 3.00
Good \$1.25 1.35 1.70 2.05 2.65 3.50
Fair \$1.00 1.10 1.30 1.75 2.30 2.90

Fruit and Jelly Presses— See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Fuse—

Per 1000 Feet.
Hemp Fuse 25c @ 60c
Cotton Fuse 25c @ 60c
Single Taped Fuse 25c @ 60c
Double Taped Fuse 40c @ 70c
Triple Taped Fuse 50c @ 70c

Gates, Molasses and Oil—

Stkdb n's 80c @ 80c @ 10c

Gauges—

Marking, Mortise, &c. 65c @ 10c @ 55c @ 10c @ 10c
Barrett's Comb. Roller Gauge 70c @ 5c @ 5c @ 10c
Stanley R. & L. Co.'s Butt & Rabbit Gauge 50c @ 1

Gimlets—
Nail, Metal, Assorted, gro. \$1.40@1.75
Spike, Metal, Assorted, gro. \$3.00@3.50
Nail, Wood Handled, Assorted,
gro. \$4.00@4.50
Spike, Wood Handled, Assorted,
gro. \$5.00@5.25

Glass, American Window

List Nov. 18, 1898.
Small lots from store:
Single or Double.
Eastern, First Bracket.....85¢10¢
Eastern, All Other Brackets.....85¢20¢
From Jobbers or Factory, with Freight
Allowance, except in Eastern district:

Carloads, Single Strength.
First Bracket.....85¢25¢
Second and Third Brackets.....89¢
All Above.....90¢25¢
Carloads, Double Strength
First Five Brackets.....80¢
60 inch Bracket.....90¢
70 to 100 inch Bracket, inclusive
90¢10¢25¢
All Above.....90¢25¢

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush.
75¢50¢
List B, Cans (½ pts., pts., qts.).....35¢10¢
List C, Cans (½ gal., gal.).....25¢45¢

Glue Pots—See Pots, Glue.

Grease, Axle—

Common Grade.....gro. \$5.00@6.00
Allerton's Axle:
1 lb. Tins, ½ gr.....\$9.00
3 lb. Tins, ½ doz., \$2.00; 5 lb., \$3.00;
25 lb. wood pails.....\$12.00
Dixon's Everlasting, 10-lb. pails, ea. 80¢
Dixon's Everlasting, in bxs., ½ doz. 1 lb.
\$1.20; 2 lb. \$2.00

Grindstone Fixtures—

See Fixtures, Grindstone.

Gun Powder—See Powder.

Hack Saws—See Saws.

Hacks, Axl—

Peg Patent, Leather Top.....\$4.90@5.25
Peg Patent, Plain Top.....\$3.50@3.75
Sewing, Brass Ferrule.....\$1.50@1.60
Saddlers', Brass Ferrule.....\$1.55@1.45
Peg, Common.....\$1.25@1.35
Brad, Common.....\$1.50@1.75

Halters and Ties—

Covert Mfg. Co., Web.....45¢25¢
Covert Mfg. Co., Jute Rope.....45¢25¢
Covert Mfg. Co., Sisal Rope.....30¢25¢
Covert's Saddlery Works', 98 list, Web.....80¢10¢
Covert's Saddlery Works, Leather.....60¢10¢
Covert's Saddlery Works, Jute.....60¢25¢
Covert's Saddlery Works, Sisal.....60¢25¢
Covert's Saddlery Works, Manila.....60¢25¢
Covert's Saddlery Works, Cotton.....70¢

Hammers—

Handled Hammers—
Heller's Machinists.....40¢40¢55¢
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50,
\$1.75.....40¢10¢
Peca, Stow & Wilcox.....40¢40¢55¢
Fayette H. Plumb:
Artisan's Choice, A. E. Nail.....39¢45¢
Engineers' and B. S. Hand.....50¢10¢
Machinists' Hammers.....50¢10¢
A. E. & A. E. Bell Face Nail.....39¢45¢
Riveting and 'Inners'.....39¢45¢
Sargent's C. S. New List.....45¢45¢10¢

Heavy Hammers and Sledges—

1 lb. and under.....lb. 15¢
3 to 5 lb.....lb. 36¢ 70¢10¢75¢
Over 5 lb.....lb. 30¢ 40¢
Note—Lower prices sometimes made
by jobbers.
Wilkinson's Smiths'.....9¢10¢10¢

Handcuffs and Leg Irons

See Police Goods.

Handles—

Agricultural Tool Handles—
Hoe, Rake, Fork, etc.....50¢10¢60¢
Shovel, etc., Wood D Handle.....50¢55¢

Cross-Cut Saw Handles—

Atkins.....40¢45¢
Champion.....40¢45¢
Distomat.....50¢

Mechanics' Tool Handles—

Auger, assorted.....gro. \$3.40@3.60
Auger, large.....gro. \$3.80@3.90
Brad Axl.....gro. \$1.50@1.75

Chisel Handles—

Apple Tanged Firmer, gro. ass'd.
\$3.25@3.35; large, \$3.75@3.80.
Hickory Tanged Firmer, gro. ass'd.
\$1.75@1.85; large, \$2.35@2.50.
Apple Socket Firmer, gro. ass'd.
\$1.75@1.85; large, \$2.35@2.50.
Hickory Socket Firmer, gro. ass'd.
\$1.60@1.75; large, \$2.15@2.30.
Hickory Socket Framing, gro. ass'd.
\$2.50@2.75; large, \$3.25@3.35.
File, assorted.....gro. \$1.00@1.15
Hammer, Hatchet, Axe, etc., 60¢10¢
Hawd Saw, Varnished, doz. 75¢50¢
Not Varnished.....55¢80¢
Plane Handles:
Jack, doz. 25¢30¢; Jack Bolted.....55¢80¢
Fore, doz. 35¢30¢; Fore, Bolted.....70¢75¢

Hangers—

Barn Door, New Pattern, Round
Groove, Regular:
Inch.....3 4 5 6 8
Doz.....\$1.10 1.15 1.20 1.25 1.30 1.35
Barn Door, New England Pattern,
Check Back, Round Groove, Reg-
ular:
Inch.....3 4 5 6
Doz.....\$1.50 1.55 1.60 1.65 1.70 1.75

Chicago Spring Butt Co.:

Friction.....25¢
Oscillating.....25¢
Big Twin.....25¢
Chisholm & Moore Mfg. Co.:

Advance.....55¢
Cleveland.....50¢
Baggage Car Door.....50¢
Elevator.....40¢
Railroad.....55¢
Car Ball Bearing, ½ doz. pair \$9.50
No. 10 Roller Bearing, doz. pr. 5.50
No. 20 Roller Bearing, doz. pr. 4.50
Nickel.....50¢
J. G. C.....50¢22¢10¢

Lane Bros.:

Parlor, Standard.....40¢52¢34¢
Parlor, New Model.....40¢34¢
Barn Door, Standard.....50¢10¢10¢
Covered.....50¢10¢10¢
Special.....60¢25¢

Lawrence Bros.:

Crown.....60¢
New York.....60¢
Sterling.....60¢
McKinney Mfg. Co.:

No. 1, Standard, \$18.....60¢10¢
No. 1, Special, \$18.....60¢10¢
Stowell Mfg. and Foundry Co.:

Badger.....60¢
Baggage Car Door.....39¢45¢
Climax Anti-Friction.....40¢
Elevator.....50¢10¢
Magic.....50¢
Matchless.....50¢10¢
Nansen.....50¢10¢
Parlor Door.....50¢
Railroad.....50¢10¢
Street Car Door.....50¢10¢
Nos. 300, 400, 500.....40¢15¢
Wild West.....50¢25¢
Zenith for Wood Track.....50¢10¢

Taylor & Boggis Foundry Co.:

Kliders.....50¢50¢10¢
American Trackless.....39¢45¢10¢
Wilcox Mfg. Co.:

Bike Roller Bearing.....60¢10¢
C. J. Roller Bearing.....60¢10¢
Cyclo Ball Bearing.....50¢
L. T. Roller Bearing.....60¢10¢
New Era.....60¢10¢
New Richards.....60¢10¢
Prindle Improved.....60¢10¢
Richards' Improved.....60¢10¢
Richards' Single Track.....50¢10¢
Wilcox Dwarf Roller Bearing.....40¢10¢
Wilcox Ives.....60¢10¢
Wilcox Tandem Roller Bearing.....60¢10¢
Wilcox Trolley Ball Bearing.....40¢
Wilcox Trolley Roller Bearing.....50¢
Wilcox Trolley Roller Bearing, Fire.....40¢10¢

Harness Menders—See Menders.

Harness Snaps—See Snaps.

Hasps—

McKinney's Perfect Hasp, ½ doz. \$1.10
40¢10¢
Wrought Hasps, Staples, etc.—See
Wrought Goods.

Hatchets—

Best Brands.....40¢10¢50¢
Cheaper Brands.....50¢10¢50¢10¢25¢
Note—Net prices often made.

Hay and Straw Knives—

See Knives.

Hinges—

Blind and Shutter Hinges—
Acme and Dixie Shutter:
No.....1 1½ 2 3½
Doz. pair.....\$0.70 .65 .60 .53
Buffalo and Queen City Reversible
Shutter:
No.....1 1½ 2 3½
Doz. pair.....\$0.70 .65 .60 .53
Lull & Porter Old Style Shutter:
No.....1 1½ 2 3½
Doz. pair.....\$0.70 .65 .60 .53
1868 Old Pattern Blind Hinge:
No.....1 1½ 2 3½
Doz. pair.....\$0.80 1.45 2.55
Parker.....70¢75¢
North's Automatic Blind Fixtures, No.
2, for Wood, \$9.00; No. 3, for Brick,
\$11.50.....10¢
Reading's Gravity.....75¢10¢
Sargent's, Nos. 1, 3, 5.....60¢10¢
Sargent's, Nos. 11 & 13.....7¢10¢70¢10¢10¢

Wrightville Hardware Co.:

Acme, Lull & Porter.....65¢10¢25¢
Buffalo Gravity Locking, Nos. 1, 3
and 5.....65¢10¢10¢
Champion Gravity Locking, No. 75, 75¢
1868 Old Pat'n, Nos. 1, 3 & 5.....75¢
Tip Pattern, Nos. 1, 3 and 5.....75¢
Double Locking, Nos. 20 and 35.....70¢
Empire, Nos. 101 and 103.....65¢10¢
Niagara Gravity Locking, Nos. 1, 3
and 5.....65¢10¢10¢
Noiseless, Nos. 50, 60, 65 and 55.....65¢10¢10¢
O. S. Lull & Porter.....65¢10¢10¢
Pioneer, Nos. 060, 45 and 5½.....65¢10¢25¢
Steamboat Gravity Locking, No. 10.....75¢
Stanley's Steel Gravity Blind Hinges,
½ doz. sets \$1.20.....20¢10¢

Gate Hinges—

Clark's or Shepard's—Doz. sets:
No.....1 2 3
Hinges with Latches.....1.50 2.50 4.25
Hinges only.....1.50 1.55 3.20
Latches only.....0.70 0.70 1.20
New England:
With Latch.....doz. \$1.75@1.80
Without Latch.....doz. \$1.40@1.45
Reversible Self-Closing:
With Latch.....doz. \$1.65@1.75
Without Latch.....doz. \$1.30@1.35
Western:
With Latch.....doz. \$1.60@1.65
Without Latch.....doz. \$1.00@1.05

Spring Hinges—

Holdback, Cast Iron, gro. \$9.00@10.00

Non-Holdback, Cast Iron.....

gro. \$7.00@7.50

J. Bardsley

Bardsley's Patent Cheeking.....10¢
Bommer Bros.:

Bommer's.....40¢
Chicago Spring Butt Co.:

Chicago.....20¢
Garden City Engine House.....20¢
Keene's Saloon Door.....20¢
Triple End.....40¢
Coleman Hdw. Co.:

Champion Holdback.....½ gr. \$10.00
J. G. C.....½ gr. \$9.50
Nickel.....½ gr. \$9.00

Lawson Mfg. Co.:

Matchless.....25¢
Matchless Pivot.....40¢
Payson Mfg. Co.:

Oblique, Dbl. Acting.....50¢50¢5¢
Stover Mfg. Co.:

Ideal, No. 16, Detachable, ½ gr.....\$12.50
Ideal, No. 4.....½ gr. \$9.00
New Idea No. 1.....½ gr. \$9.00
New Idea, Double Acting.....45¢
Van Wagner & Williams Hdw. Co.:

Acme, Wrt. Steel.....30¢
Acme, Brass.....30¢
American.....30¢
Columbia, No. 14.....½ gr. \$9.00
Columbia, No. 18.....½ gr. \$9.00
Columbia, Adjustable.....30¢
Gem, new list.....35¢
Cover Leaf.....½ gr. \$12.50
Oxford, new list.....25¢

Wrought Iron Hinges—

Strap and T Hinges, etc., List Mar.
15, 1899:

Light Strap Hinges.....60¢45¢
Heavy Strap Hinges.....70¢
Light T Hinges.....50¢10¢
Heavy T Hinges.....60¢10¢
Extra Heavy T Hinges.....60¢10¢

Hinge Hasps—

Stanley's Corrugated Heavy
Strap.....75¢
Stanley's Cor. Ex. Heavy T.....66¢10¢

NOTE—Change in base discounts.

Rolled Plate.....70¢70¢5¢
Screw Hook.....6 to 12 in., lb. 3½¢34¢
and Strap.....1½ to 20 in., lb. 3½¢34¢
Screw Hook and Eye:
¾" 1 inch.....lb. 5½¢54¢
¾" 1 inch.....lb. 6½¢64¢
¾" 1 inch.....lb. 8½¢84¢

Hoes—

Scovill and Oval Pattern.....60¢50¢60¢10¢5¢
Grub. list Feb. 23, 1899.....85¢65¢10¢
D. & H. Scovill.....85¢35¢5¢

Handled—

Aug. 1, 1899, List:
Field and Garden.....75¢25¢
Ladies', Boys', Toy and Onion.....70¢10¢10¢
Street and Mortar.....75¢74¢25¢
Cotton.....70¢10¢10¢5¢25¢
Planters'.....70¢30¢
Weeding.....75¢
Note—Manufacturers and jobbers use
a diversity of lists, and often sell at net
prices.

Ft. Madison Crucible Garden Hoe.....75¢25¢
Ft. Madison Crescent Cultivator Hoe.....75¢10¢25¢
Ft. Madison Mattock Hoe, ½ doz.....\$4.50
Ft. Madison Sprouting Hoe, ½ doz.....\$4.80
Ft. Madison Dixie Tobacco Hoe.....75¢20¢
Kretzinger's Cut Easy, per doz.....75¢25¢
Warren Hoe.....60¢

Hog Rings and Ringers—

See Rings and Ringers.

Hoisting Apparatus—

See Machines, Hoisting.

Hollow Ware—

See Ware, Hollow.

Holders—

Bit.....45¢10¢
Angular, ½ doz. \$34.00.....45¢10¢
File and Tool.....50¢10¢
Nicholson File Holders and File Han-
dles.....39¢45¢

Hooks—Cast Iron—

Bird Cage, Reading.....50¢10¢60¢
Bird Cage, Sargent's List.....35¢10¢
Clothes Line, Sargent's List.....40¢40¢10¢
Clothes Line, Stowell's.....70¢
Clothes Line, Reading List.....85¢10¢65¢10¢10¢
Coat and Hat, Stowell's.....70¢
Coat and Hat, Reading.....70¢75¢
Coat and Hat, Sargent's List.....35¢10¢
Coat and Hat, Wrightville.....65¢10¢
Harness, Reading List.....70¢10¢75¢

Wire—

Bell.....75¢75¢10¢
Atlas, Coat and Hat.....50¢50¢10¢
Clear Harness.....50¢10¢
Wire Coat and Hat:
Acme.....60¢60¢25¢
B. B.....70¢70¢25¢
Y. B., Chief and Clear.....50¢10¢
Gem.....50¢10¢
Bright Wire Goods—See Wire.

Wrought Iron—

Box, or Case, Octagon Steel.....doz. \$3.10@3.20
Cotton.....doz. \$1.05@1.15
Picture, T. & S. Mfg. Co.....75¢
Tassel, T. & S. Mfg. Co.....50¢10¢
Wrought Staples, Hooks, etc.—See Wrought Goods.

Miscellaneous—

Bush, Light, doz. \$5.50; Medium,
\$6.00; Heavy, \$6.50
Grass.....Nos. 1 2 3 4
Best.....\$1.50 1.75 3.00
Common.....\$1.40 1.60 1.50 1.75
Potato and Manure.....75¢15¢
Whiffletrees.....lb. 4½¢

Hooks and Eyes:

Brass.....60¢10¢10¢70¢
Malleable Iron.....70¢5¢70¢10¢
Covert Saddles' Works' Self Locking
Gate and Door Hook.....80¢10¢
Crown Picture.....50¢10¢
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—See Nails, Horse

Horseshoes—

See Shoes, Horse.

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 1¼¢ 5¼¢
3-ply Standard.....ft. 6¼¢ 7 c
4-ply Standard.....ft. 8 9 c
3-ply extra.....ft. 9 10 c
4-ply extra.....ft. 11 12 c
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 5 7 c
Fair quality.....ft. 8 9 c

Irons—Sad—

From 4 to 10.....lb. 3¼¢34¢
B. B. Sad Irons.....lb. 3¼¢4¢
Chinese Laundry.....lb. 5¢54¢
Chinese Sad.....lb. 3¼¢34¢
Mrs. Potts', per set:
Nos. 60 65 60 65
85¢1.00 78¢95¢ 95¢1.10 89¢1.05
New England Pressing, lb. 3¼¢34¢

Soldering—

Soldering Coppers.....lb. 23¢30¢
Covert Mfg. Co.....20¢25¢

Pinking—

Pinking Irons.....doz. 50¢60¢

Jack Screws—See Screws.

Jacks, Wagon—

Covert Mfg. Co., Steel.....45¢25¢
Daisy.....70¢
Ill. I. & B. Co. Common.....70¢75¢
Lockport.....40¢40¢10¢
Victor.....60¢
Lane's Steel.....89¢45¢

Kettles—

Brass, Spun, Plain, list Jan. 10, '99
15¢20¢
Enameled and Cast Iron—See Ware,
Hollow.

Knife Sharpeners—

See Sharpeners, Knife.

Knives—

Butcher, Shoe, &c.—
Dick's Butcher Knives.....40¢
Foster Bros' Butcher.....30¢
Nichols' Butcher Knives.....50¢
Hay and Straw—See Hay Knives.

Corn—

Ft. Madison Cut-Easy, ½ doz.....\$3.35

Drawing—

Standard List.....70¢10¢75¢45¢
Adjustable Handle.....25¢34¢
Bradley's.....35¢
Swan's.....70¢10¢24¢
Watrous.....30¢10¢40¢
L. & J. White.....20¢20¢25¢
Cautelo's Folding.....50¢50¢25¢

Hay and Straw—

Blizzard.....\$5.75@6.00
Iwan's Sickle Edge.....½ doz. \$11.50
Lightning.....\$7.50

Mining—

Buffalo.....½ gro. \$15.00
Smith's, ½ doz., Single, \$2; Double, \$3
45¢50¢

Miscellaneous—

Farriers'.....doz. \$3.00@3.00
Wostenholme's.....½ doz. \$3.00@3.25

Knobs—

Base, ¾-inch, Birch, Rubber tip,
gro.....\$1.50@1.55
Carriage, Jap. all sizes.....gro. 30¢33¢
Door, Mineral.....doz. 85¢30¢
Door, Por. Jap. d.....doz. 97¢c
Door, Por. Nickel.....doz. \$1.10@1.20
Bardsley's Wood Door, Shutter, &c., 10¢
Picture, Sargent's.....60¢10¢
Snow's Victor.....60¢10¢

Ladies' Melting—

L. & G. Mfg. Co.....60¢
P. S. & W.....40¢40¢10¢
Sargent's.....40¢40¢10¢

Lanterns—Tubular—

Regular Tubular.....doz. \$1.00@1.50
Side Lift Tubular.....doz. \$1.25@1.75
Square Lift Tubular.....doz. \$1.21@1.75
Other Styles.....10¢10¢10¢10¢25¢
Mayrose Side Lift Tubular, doz. \$3.50.....45¢10¢

Bull's Eye Police—

¾-inch flash light.....doz. \$3.50@3.75
3-inch flash light.....doz. \$4.00@4.25
¾-inch regular.....doz. \$3.25@3.50
3-inch regular.....doz. \$3.50@3.75

Latches, Thumb—

Roggin's Latches.....doz. 35¢45¢

Lawn Mowers—

See Mowers, Lawn.

Leaders, Cattle—

Small.....doz. 45¢; large, 55¢
Covert Mfg. Co.....45¢25¢

Lemon Squeezers—

See Squeezers, Lemon.

Lifters, Transom—

Dickson:
 3 x 4 ft. x 1/2".....\$100 \$11.00
 Other sizes, Iron.....70¢10¢
 Other sizes, Brass and Bronze.....70¢
 Excelsior.....60¢60¢10¢
 Payson's:
 Solid Grip Nos. 643 and 644, \$100,
 \$11.00
 Bronzed Iron.....70¢

Lines—

Wire Clothes, Nos. 18 19 20
 100 feet.....\$3.50 \$ 75 \$ 25
 75 feet.....\$1.75
 Ossawaun Mills:
 Crown Solid Braided Chalk.....\$8.45
 Mason's, No. 0 to No. 5.....\$3.25
 Silver Lake Braided Chalk, No. 0, \$6.00;
 No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50
 No. 4, \$8.00; No. 5, \$8.50.....80¢

Locks, &c.— Cabinet—

Cabinet Locks.....\$3.50@3.75@7.75

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co.....40¢
 R. & E. Mfg. Co.....42¢ 05
 Sargent & Co.....40¢40¢10¢
 Slaymaker & Barry Co.....30¢35¢
 Snow's Victor.....50¢10¢

Elevator—

Stowell's.....\$3.45

Padlocks—

Wrought Iron, list Dec. 3, '97.....70¢70¢10¢

Dog Collar, S. B. Co.....40¢

R. & E. Mfg. Co. Wrt. Steel and Brass.....50¢

S. B. & Co.....40¢

Sash, &c.—

Fitch's Bronze and Brass.....60¢45¢
 Fitch's Iron.....70¢
 Jives' Patent.....60¢45¢10¢60¢10¢
 Payson's Perfect.....70¢
 Payson's Signal (new list).....75¢
 Reading.....60¢10¢10¢70¢

Machines—**Boring—**

Without Augers.

Improved No. 3.....\$4.25 No. 1 \$5.00

Improved No. 4.....\$ 7.75 No. 2 \$ 8.38

Improved No. 5.....\$ 2.75

Jennings.....\$ 2.50 \$ 3.00

Millers' Falls.....\$ 4.75

Swan's, Rice's Pat. \$ 2.50 \$ 2.75

Swan's, No. 600.. \$ 1.10 No. 900 \$ 4.45

Holisting—

Moore's Anti-Friction Differential Pulley Block.....\$0.30

Moore's Hand Hoist, with Lock Brake.....\$0.30

Washing—

Wayne American, \$ doz. \$37.00

Western Star, No. 2, \$ 28.00

Western Star, No. 3, \$ 30.00

St. Louis, No. 41, \$ doz. 60.00

Mallets—

Hickory.....\$5.25@50¢55¢

Lignumvite.....\$5.25@50¢55¢

Tinnars', Hickory and Applewood, doz.....\$60@55¢

Fiber Head Stearns.....\$80@10¢

Mats—**Door—**

Elastic Steel (W. G. Co.).....10¢

Mattocks—

List Feb. 23, 1899.....65¢65¢10¢

Meat Cutters—

See Cutters, Meat.

Milk Cans—See Cans, Milk.**Mills— Coffee—**

Box and Side, list Jan. 1, '93.....60¢50¢60¢10¢55¢

Net prices are often made on some goods which are lower than above discounts.

Enterprise Mfg. Co., list Jan. 17, '93.....30¢

National, list Jan. 1, '94.....30¢

Parker's Columbia and Victor.....60¢10¢

Parker's Upright.....\$80@10¢40¢

Swift, Lane Bros.....30¢

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Net prices are generally quoted.

Cheap.....\$1.85@1.50@1.10

Good.....\$ 3.25 \$ 3.50 \$ 3.75 \$ 4.00

High Grade 4.25 4.50 4.75 5.00

Pennsylvania and Continental 60¢10¢55¢

Quaker City.....70¢25¢

Great American.....70¢25¢

Philadelphia:

Styles M., S. C., K., T.....70¢10¢
 Style A, all Steel.....60¢10¢
 Style E, Low Wheel.....60¢10¢
 Style E, High Wheel.....70¢10¢
 Drexel and Gold Coin, low list.....50¢

Nails—

Cut and Wire. See Trade Report.

Wire Nails and Brads, Papered.

List July 20, 1899.....80¢80¢10¢

Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos. 6 7 8 9 10

A. C.....25¢ 23¢ 22¢ 21¢ 21¢

Capewell.....19¢ 18¢ 17¢ 16¢ 16¢10¢55¢

C. B. K.....25¢ 23¢ 22¢ 21¢ 21¢

Champlain.....25¢ 23¢ 22¢ 21¢ 21¢

Maud S.....25¢ 23¢ 22¢ 21¢ 21¢

Neponset.....25¢ 21¢ 20¢ 19¢ 18¢

Putnam.....25¢ 21¢ 20¢ 19¢ 18¢

Standard.....25¢ 21¢ 20¢ 19¢ 18¢

Star.....25¢ 21¢ 20¢ 19¢ 18¢

Vulcan.....25¢ 21¢ 20¢ 19¢ 18¢

Picture

1 1/4 2 3/4 3 3 1/2 in.

Brass Head.....\$5.00 \$ 7.00 \$ 9.00 \$ 1.00 gro.

Por. Head.....1.10 1.10 1.10 .. gro.

Nippers, See Pliers and Nippers.**Nut Crackers—**

See Crackers, Nut.

Nuts—

List Feb. 1, '99.

Cold Punched, Off

Mfrs. or U. S. Standard, list.

Hexagon, plain.....\$ 9.00@4.100

Square, plain.....\$ 9.00@4.100

Square, C. T. & R.....\$ 7.00@3.900

Hexagon, C. T. & R.....\$ 8.00@4.100

Hot Pressed:

Mfrs., U. S. or Nar. Gauge Stan'd.

Square.....\$ 8.00@4.100

Hexagon.....\$ 8.00@4.100

Nuts—Tapped Nuts are now 2-10c.

higher than above.

Oakum—

Best or Government.....lb. 5¢4c

Navy.....lb. 4¢4c

U. S. Navy.....lb. 5¢4c

Plumbers' Spun Navy.....\$4c

In carload lots 1/4 lb. off f.o.b. New York.

Oil Tanks—See Tanks, Oil.**Oilers—**

Brass and Copper.....40¢10¢50¢

Tin or Steel.....60¢10¢10¢70¢55¢

Zinc.....60¢55¢65¢

Malleable, Hammers' Improved, No. 1.

\$3.60; No. 2, \$4; No. 3, \$4.40 \$ doz. 30¢

Malleable, Hammers' Old Pattern.

same list.....50¢10¢

Wilmot & Hobbs Mfg. Co.....70¢70¢10¢

Openers—**Can—**

French.....doz. 55¢

Iron Handle.....doz. 55¢70¢

Sprague, Iron Handle, per doz. 55¢40¢

Sardine Sissors.....doz. \$1.75@3.00

National, \$ gro.....\$1.75@3.00

Stowell's.....per doz. 40¢45¢

Egg—

Nickel Plate.....per doz. \$2.00

Silver Plate.....per doz. \$4.00

Packing—**Rubber—**

Standard, fair quality.....70¢10¢75¢

Inferior quality.....75¢10¢80¢

Extra.....60¢50¢60¢10¢55¢

Jenkins' Standard, \$ doz. 25¢25¢55¢

Miscellaneous—

American Packing.....90¢10¢ lb.

Cotton Packing.....15¢11¢ lb.

Italian Packing.....10¢11¢ lb.

Jute.....6¢5¢4¢ lb.

Russia Packing.....15¢13¢ lb.

Pails—**Creamery—**

S. S. & Co., with gauges.. No 1 \$6.50;

No. 2, \$6.75 \$ doz.

Galvanized—

Inch.....10 12 14

Water, Standard, gro.....\$13.00 \$26.00 \$39.00

Water, Regular.....19.00 \$2.00 \$5.00

Water, Heavy.....22.00 \$5.50 \$9.00

Fire, Rd. Bottom, gro.....\$1.00 \$3.00 \$5.00

Well, gro.....\$7.00 \$9.00 \$1.00

Pans—**Dripping—**

Large Sizes.....lb. 1/4c

Small Sizes.....lb. 1/4c

Fry—

Standard List.....75¢10¢80¢

Roasting and Baking—

Regal, S. S. & Co., \$ doz. Nos. 5 \$4.50;

10, \$5.00; 20, \$5.50; 30, \$6.00

Simplex, \$ gro. No. 40, \$30.00; 50,

\$34.50; 60 \$39.00; 140, \$33.00; 150,

\$37.50; 180, \$43.00.

Paper—**Building Paper—**

Per roll

Rosin Sized Sheathing: 500 sq. ft.

Light wt., 20 sq. ft. to lb. \$0.40@0.45

Medium wt., 12 sq. ft. to lb. \$0.60@0.65

Heavy wt., extra quality, \$0.95@1.05

Medium Grades Water Proof

Sheathing.....\$0.80@1.25

Deafening Felt, 2, 6 and 1 1/2 sq. ft.

to lb., ton.....\$45.00@50.00

York Haven Waterproof Sheathing.....\$1.35@1.75

Tarred Paper.

1 ply (roll 300 sq. ft.), ton, \$35.00@40.00

2 ply, roll 100 sq. ft.....90¢

3 ply, roll 100 sq. ft.....\$1.20

Sand and Emery—

List Dec. 23, 1899.....50¢10¢50¢10¢10¢

See Trade Report.

Parers—**Apple—**

Advance.....\$ doz. \$4.50

Baldwin.....\$ doz. \$5.00

Bonanza.....each \$2.00

Dandy.....each \$7.50

Eureka, 1898.....each \$16.00

Family Bay State.....\$ doz. \$12.00

Hudson's Little Star.....\$ doz. \$4.00

Hudson's Rocking Table.....\$ doz. \$5.50

Improved Bay State \$ doz. \$27.00@30.00

New Lightening.....\$ doz. \$5.50

Reading 72.....\$ doz. \$4.00

Reading 78.....\$ doz. \$7.00

Turn Table '98.....\$ doz. \$5.50

White Mountain.....\$ doz. \$4.00

Potato—

Saragosa.....\$ doz. \$5.50

White Mountain.....\$ doz. \$4.50

Paris Green—

Arsenic, kegs or casks.....lb. 12 1/2c

Kegs, 100 to 175 lb.....lb. 15 c

Kills, 15, 23, 55 lb.....lb. 14 c

Paper boxes, 1 to 5 lb.....lb. 14 c

Paper boxes, 1 lb.....lb. 14 1/2c

Paper boxes, 1/2 lb.....lb. 15 1/2c

Paper boxes, 1/4 lb.....lb. 16 1/2c

Picks and Mattocks—

List Feb. 23, 1899.....65¢65¢10¢

Pinking Irons—

See Irons, Pinking.

Pins—**Escutcheon—**

Brass.....60¢80¢55¢

Iron, list Nov. 11, '98.....60¢80¢55¢

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in.....50¢50¢10¢

Extra Heavy, 2-6 in.....50¢10¢60¢

Fittings.....60¢60¢10¢

Pipe, Wrought Iron—

Factory Shipments.

List February, 1899.

Plain and Galvanized:

Carload lots.....50¢10¢10¢

Less than carload lots.....50¢10¢2 1/2¢

Screw and Socket Casing.....37 1/2¢5¢

Inserted Joint Casing.....37 1/2¢5¢

Cold Drawn Seamless Steel Tubing.....60¢

Planes and Plane Irons—

Wood Planes—

Molding.....40¢2 1/2¢40¢55¢

Bench, First quality.....45¢10¢45¢10¢55¢

Bench, Second quality.....50¢10¢50¢10¢55¢

Bailey's (Stanley R. & L. Co.)

50¢10¢50¢10¢10¢

Gage Self Setting.....35¢

Iron Planes—

Bailey's (Stanley R. & L. Co.)

50¢10¢50¢10¢10¢

Chaplin's Iron Planes.....50¢10¢

Miscellaneous Planes (Stanley R. & L. Co.)

25¢10¢25¢10¢10¢

Sargent's.....50¢10¢60¢

Plane Irons—

Wood Bench Plane Irons.. 55¢55¢55¢

Buck Bros.....\$5.00@5.25 to 2

Stanley R. & L. Co.. 50¢10¢50¢10¢10¢

L. & J. White.....20¢5¢25¢

Plates—

Felloe.....lb. 3 1/4¢3 1/2¢

Self-Sealing Pie Plates (S. S. & Co.), \$

Pulleys—

Hay Fork, Stowel or Solid Eye.....
 Hay Fork, Stowell's Anti-Friction, 5-in.
 Wheel, # doz. \$12.00.....
 Hot House, Awning, &c.....
 Japanned Clothes Line.....
 Japanned Screw.....
 Japanned Side.....
 Stowell's Ceiling Rod, Anti-Friction 60%
 Stowell's Dumb Walter, Anti-Friction.....
 Stowell's Electric Light.....
 Stowell's Side, Anti-Friction.....

Sash Pulleys—

Common Sense, 1 1/2 in. # doz. 20¢;
 2 in. 32¢.
 Empire..... 1 1/2 in. 17¢; 2 in. 19¢
 Grand Rapids All Steel Noiseless.....
 Ideal No. 13..... 1 1/2 in. # doz. 20¢
 Improved..... 1 1/2 in. 17¢; 2 in. 19¢
 Niagara..... 1 1/2 in. 16¢; 2 in. 19¢
 No. 36, Troy..... 1 1/2 in. 16¢; 2 in. 19¢
 Star..... 1 1/2 in. 16¢; 2 in. 19¢
 Aome..... 1 1/2 in. 16¢; 2 in. 19¢
 Fox-All-Steel, Nos. 3 and 7, 2 1/2 in. # doz. 25¢
 Extra for Plated Finish..... # doz. 20¢
 Extra for Anti-Friction Bronze Pushing..... # doz. 10¢

Tackle Blocks—See Blocks.**Pumps—**

Cistern..... 60¢@60¢5¢
 Pitcher Spout..... 70¢@10¢75¢
 Pump Leathers, all sizes..... gro. \$6.00
 Flint & Walling's Fast Mail..... 50¢@55¢
 Flint & Walling's Pitcher Spout, 70% 10¢
 Loud's Suction Pumps, U. S. Co..... 20¢
 Myer's Pumps, low list..... 50¢
 Contractors' Rubber Diaphragm Non-
 extractable, B. & L. Block Co..... 20¢

Punches—

Revolving (4 tubes)..... doz. \$3.75@4.00
 Saddlers' or Drive, good..... doz. 65¢@70¢
 Spring, good quality..... \$1.70@1.80
 Bemis & Call Co.'s Cast Steel Drive..... 50¢
 Bemis & Call Co.'s Check..... 55¢
 Bemis & Call Co.'s Spring..... 50¢
 Niagara Hollow Punches..... 45¢
 Niagara Solid Punches..... 45¢
 Spring, Leach's Pat..... 15¢
 Steel Screw, B. & K. Mfg. Co..... 40¢
 Timmers' Hollow, P. S. & W. Co..... 35¢@35¢5¢
 Timmers' Solid, P. S. & W. Co., # doz.,
 \$1.44..... 55¢

Rail—

Barn Door, &c.—
 Barn Door, Light, 1/2 in. 1/2 1/2
 100 feet..... \$2.00 \$2.50 \$3.00
 B. L. for N. E. Hangers.....
 Small, Med. Large.....
 100 feet..... \$2.20 \$2.70 \$3.00
 Sliding Door, Bronzed Wrt Iron.....
 Sliding Door, Iron Painted..... 1/2 1/2
 Sliding Door, Wrought Brass, 1 1/2
 in..... lb. 36¢. 30¢
 Cronk's Double Braced Steel Rail, #
 foot..... \$3.40
 Lane's O. N. T., # 100 ft. 1 inch..... 4.25
 Lane's Standard, # 100 ft..... 4.25
 Lawrence Bros..... # ft. 4 1/2
 McKinney's None Better..... # ft. 8¢
 McKinney's Standard..... # ft. 8 1/2
 Moore's Wrt. Bracket Steel..... 3 1/2
 Stowell's Steel Rail, Plain..... 15¢

Rakes—

Aug. 1, 1899, List:
 Cast Steel..... 70¢@5¢
 Malleable..... 68¢
 Fort Madison Red Head Lawn..... \$3.25
 Fort Madison Blue Head Lawn..... \$3.00

Rasps, Horse—

Diamond's..... 75¢
 Heller Bros..... 60¢@10¢0¢
 McCaffrey File Co. Horse Rasps.....
 See also Files..... 60¢@10¢5¢
 New Nicholson Horse Rasp..... 70¢@10¢
 See also Files.....

Razors—

Fox Razors, No. 42..... # doz. \$20.00
 Fox Razors, No. 44..... # d z \$24.00
 Fox Razors, No. 82, Platina, # doz.....
 \$24.00

Razor Stropps—

See Stropps, Razor.

Reels—

Fishing—
 Hendryx Aluminum, German Silver,
 Gold, Bronze, Silver, Rubber, Popolo
 and Salmon, Single Action, Multiply-
 ing and Quadruple, all sizes..... 25¢
 Hendryx Single Action Series, 102 P
 and PN, 202 P and PN, 102 PR and
 PN, 302 PR and PN, 502 P and
 PN, 602 P and PN, 802 P and PN,
 802 and 802N, 902 and 902N, Competitor,
 Hendryx Multiplying and Quadruple
 Series, 3004N and PN, 4N and PN,
 5004N and PN, 602904N and PN, 0924
 and 0924N, 5009N and PN..... 40¢@10¢

Registers—

For points on Mississippi River and
 East:
 Black Japanned..... 50¢@10¢
 White Japanned..... 50¢@10¢
 Bronzed Finishes..... 80¢
 Nickel Plated..... 50¢@10¢
 Electro Plated in Brass, &c..... 50¢@10¢
 White Porcelain..... 80¢
 Solid Brass and Bronze Metal..... 80¢
 Note.—Higher prices are quoted in
 territory further West.

Riddles, Grain or Sand—

16 in. per doz..... \$3.00@3.25
 17 in. per doz..... \$3.25@3.50
 18 in. per doz..... \$3.50@3.75

Rings and Ringers—

Bull Rings—
 Steel..... \$0.75 0.85 0.88 doz.
 Copper..... 1.10 1.20 1.50 doz.

Hog Rings and Ringers—

Hill's Rings..... gro. boxes, \$1.50@5.00
 Hill's Ringers, G. I..... doz. 75¢
 Blair's Rings..... # gr. \$5.75@6.00
 Blair's Ringers..... # doz. \$0.90@1.00
 Brown's Rings..... # gr. \$0.90@1.00
 Brown's Ringers..... # doz. \$1.00@1.10
 Perfect Rings..... # doz. \$0.90@1.00
 Perfect Ringers..... # doz. \$1.25@1.35
 Rapid Rings..... # gr. \$0.80
 Rapid Ringers..... # doz. \$3.50

Rivets and Burrs—

Copper..... 10¢@10¢50¢
 Iron or Steel:
 Timmers..... 55¢@55¢10¢
 Miscellaneous..... 55¢@55¢10¢

Rivet Sets—See Sets.**Roasting and Baking**

Pans—See Pans, Roasting and

Baking.**Rollers—**

Acme, Stowell's Anti-Friction..... 50¢
 Barn Door, Sargent's list, 60% 10¢@10¢70¢
 Lane's, Stay..... 33¢@5¢
 Stowell's Barn Door Stay..... # doz. \$1.25

Rope—

Note.—Carload lots, except on Jute
 Rope, 1/2 c. per lb. less than the following
 prices, which are for small lots.
 Manila, 7-16 in. and larger..... lb. @ 15¢
 Manila..... 1/4-inch lb. @ 16¢
 Manila..... 1/2 and 5-16 in. lb. @ 16¢
 Manila, Tarred Rope, 15
 thread..... lb. @ 15¢
 Manila Hay Rope Med'm lb. @ 15¢
 Sisal, 7-16 in. and larger lb. @ 10¢
 Sisal..... 1/4-inch lb. @ 11¢
 Sisal..... 1/2 and 5-16 in. lb. @ 11¢
 Sisal, Hay Rope, # 10 to
 ply..... lb. @ 10¢
 Sisal, Tarred, Medium
 Lath Yarn..... lb. @ 10¢
 Cotton Rope:
 Best, 1/4 in. and larger..... lb. 13¢@14¢
 Med'm, 1/4 in. and larger..... lb. 10¢@12¢
 Com., 1/4 in. and larger lb. 8¢@10¢
 Jute Rope, No. 1, 1/4 in. lb. @ 7¢
 Jute Rope No. 2, 1/4 in. lb. @ 6 1/2¢
 and up..... lb. @ 6 1/4¢

Wire Rope—

Galvanized..... 20¢@2 1/2¢
 Plain..... 30¢@3 1/2¢

Ropes, Hammock—

Covert Mfr., C..... 45¢@3¢
 Covert Saddlery Works..... 60¢

Rules—

Boxwood..... 75¢@10¢10¢10¢75¢10¢10¢
 Ivory..... 10¢@10¢
 Ivory..... 10¢@10¢10¢10¢10¢10¢10¢
 Lufkin's Steel..... 50¢@10¢
 Lufkin's Lumber..... 50¢@10¢
 Stanley R. & L. Co.:
 Boxwood..... 75¢@10¢10¢75¢10¢10¢10¢
 Ivory..... 35¢@10¢10¢35¢10¢10¢10¢

Sad Irons—See Irons, Sad.**Sand and Emery Paper**

and Cloth—
 See Paper and Cloth.

Sash Cords—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fill-

ers—See Stuffers or Fillers,
 Sausage.

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Saws—**

Atkins' Circular..... 50¢@50¢10¢
 Atkins' Band..... 50¢@10¢50¢
 Atkins' Cross Cut..... 35¢@5¢
 Atkins' Mulay, Mill and Drag..... 50¢@10¢
 Atkins' One-Man Saw..... 40¢
 Atkins' Wood Saws..... 40¢
 Atkins' Hand, Compass, &c..... 40¢
 Diston Circular Solid and Inset.....
 Tooth..... 50¢
 Diston Band 2 to 14 in. wide..... 50¢
 Diston Band 1/4 to 1 1/2..... 70¢
 Diston Crosscuts..... 45¢@45¢10¢
 Diston Narrow Crosscuts..... 45¢@50¢10¢
 Diston Mulay, Mill and Drag..... 60¢
 Diston Framed Woodsaws..... 35¢@35¢7 1/2¢
 Diston Woodsaw Blades..... 40¢@40¢7 1/2¢
 Diston Woodsaw Rods..... 35¢
 Diston Woodsaws, Nos. 12, 99, 9, 16,
 1100, D8, 120, 73, 77, 8..... 25¢@35¢7 1/2¢
 Diston Hand Saws, Nos. 7, 107, 107 1/2,
 3, 1, 0, 00, Combination..... 30¢@30¢7 1/2¢
 Diston Compass Keyhole..... 25¢@25¢7 1/2¢
 Diston Butcher Saws and Blades.....
 35¢@35¢7 1/2¢
 C. E. Jennings & Co.'s..... 25¢@35¢7 1/2¢
 Peace Circular and Mill..... 50¢
 Peace Cross Cuts, list Jan. 1, '99..... 50¢
 Peace Hand, Panel and Rip..... 80¢
 Richardson's Circular and Mill..... 60¢
 Richardson's X Cuts, list Jan. 1, '99..... 60¢
 Simonds' Circular Saws..... 50¢
 Simonds' Crescent Ground Cross Cut
 Saws..... 35¢
 Simonds' One-Man Cross Cuts..... 40¢@10¢
 Simonds' Gang Mill, Mulay and Drag
 Saws..... 45¢@45¢5¢

Scrolls—

Barnes' No. 7, \$15..... 25¢
 Barnes' Scroll Saw Blades..... 40¢
 Barnes' Velocipede Power Scroll Saw,
 without boring attachment, \$18..... 20¢
 Lester, complete, \$10.00..... 15¢@10¢
 Rogers, complete, \$4.00..... 15¢@10¢

Scale Beams—

See Beams, Scales.

Scales—

Family, Turnbull's..... 50¢@50¢10¢
 Hatch, Counter:
 Platform, 1/2 lb. by 1/4 oz. # doz. \$5.75
 Two Platforms, 8 lb. by 1/4 oz. # doz. \$16.00

Union Platform, Plain..... \$2.00@2.10

Union Platform, Striped..... \$2.15@2.25
 Chatillon's Eureka..... 25¢
 Chatillon's Favorite..... 40¢
 Chatillon's Grocers' Trip Scales..... 50¢
 Pelouze..... 50¢
 Grocers' and Postal..... New list net
 "The Standard" Portables..... 45¢
 "The Standard" R. R. and Wagon..... 50¢

Scrapers—

Box, 1 Handle..... doz. \$3.25@3.75
 Box, 2 Handle..... doz. \$3.75@4.00
 Ship, No. 1, doz. \$3.50; No. 2..... 2.25@3.40
 Adjustable Box Scraper (S. R. & L. Co.)
 \$6.00..... 40¢@10¢
 Foot, W. E. Pratt Mfg. Co. # doz. \$1.15@1.25

Screens, Window and

Frames—
 Bonanza Window Screens..... 50¢@10¢2 1/4¢
 Maine Window Screen Frames 40¢@10¢3 1/2¢
 Phillips' Window Screen Frames..... 60¢
 Porter's Extension Window Screens.....
 50¢@10¢
 Washash Spring Adj. Screen..... 50¢

Screw Drivers—

See Drivers, Screw.

Screws—

Bench and Hand—
 Bench, Iron, # doz. 1 in., \$3.70@3.00;
 1 1/2, \$3.10@3.25; 1 3/4, \$4.00
 Bench, Wood, Beech, # doz. \$3.50@3.75
 Hand, Wood..... 35¢@40¢
 Hand, Grand Rapids..... 35¢
 Hand, R. Bliss Mfg. Co..... 35¢
 Coach, Lag and Hand Rail—
 Lag, Common Point, list Oct. 1,
 '99..... 65¢@5¢
 Coach and Lag, Gimlet Point, list
 Oct. 1, '99..... 65¢
 Hand Rail, list Jan. 1, '99, 60¢@10¢

Jack Screws—

Millers Falls..... 50¢@10¢10¢
 Millers Falls, Roller..... 50¢@10¢
 P. S. & W..... 40¢@5¢40¢10¢
 Sargent's..... 60¢@10¢60¢10¢10¢

Machine—

List Jan. 1, '99.
 Flat or Round Head, Iron..... 50¢
 Flat or Round Head, Brass..... 60¢
 Set (Iron or Steel)..... 60¢
 Sq. Hd. Cap..... 55¢
 Hex. Hd. Cap..... 60¢

Wood—

List Jan. 1, 1900.
 Flat Head, Iron..... 90¢
 Round Head, Iron..... 75¢
 Flat Head, Brass..... 77 1/2¢
 Round Head, Brass..... 78 1/2¢
 Flat Head, Bronze..... 78 1/2¢
 Round Head, Bronze..... 70¢
 Drive Screws..... 80¢
 Note.—An extra 10 or 10¢ is
 often given.

Scroll Saws—See Saws, Scroll.**Scythes—**

Grass Scythes:
 Natural Finish..... per doz. \$3.00
 Pol. Blade..... per doz. \$3.40
 Painted or Bronzed..... per doz. \$3.25
 Weed and Bush..... per doz. \$7.50@7.75

Scythe Snaths—

See Snaths, Scythes.

Seeders—

Raisin—
 Enterprise..... 25¢@30¢

Sets—

Brad Aul and Tool Sets—
 Wood Hdl., 10 Auls doz. \$2.00@2.25
 Wood Hdl., 14 Auls, 6 Tools.....
 doz. \$3.50@2.60
 Alken's Sets, Aw and Tools.....
 No. 30, # doz. \$10.00, 60¢@10¢60¢10¢5¢
 Fray's Adj. Tool Hdl. S. Nos. 1, 113; 2,
 118; 3, 113; 4, 99; 5, 97..... 50¢
 Millers Falls Adj. Tool Hdl. S. No. 1,
 112; No. 4, 112; No. 5, 118..... 15¢@10¢
 Stanley's Explosor:
 No. 1..... \$7.50; No. 2 \$4.00; No. 3,
 \$5.50..... 30¢@10¢30¢10¢10¢

Garden Tool Sets—

Ft. Madison Rakes, Shovels and Hoe.....
 # doz. \$9.00

Nails—

Round, assorted..... gro. \$3.25@3.75
 Octagon..... gro. \$4.25@4.75
 Knurled, Good..... gro. \$5.00@5.50
 Buck Brothers..... 37 1/2¢
 Cannon's Diamond Point, # gr. \$1.25.....
 50¢
 Snell's Corrugated, Cup Pt..... 50¢
 Snell's Knurled, Cup Pt..... 66 1/2¢

Rivet—

Regular list..... 70¢@70¢10¢5¢

Saw—

Alken's Genuine..... # doz. \$4.50@5.00
 Alken's Imitation..... # doz. \$3.00@3.10
 Alken's Criterion..... 40¢
 Alken's Adjustable..... 40¢
 Bemis & Call Co.'s Cross Cut..... 80¢

Scroll—

Barnes' No. 7, \$15..... 25¢
 Barnes' Scroll Saw Blades..... 40¢
 Barnes' Velocipede Power Scroll Saw,
 without boring attachment, \$18..... 20¢
 Lester, complete, \$10.00..... 15¢@10¢
 Rogers, complete, \$4.00..... 15¢@10¢

Scale Beams—

See Beams, Scales.

Scales—

Family, Turnbull's..... 50¢@50¢10¢
 Hatch, Counter:
 Platform, 1/2 lb. by 1/4 oz. # doz. \$5.75
 Two Platforms, 8 lb. by 1/4 oz. # doz. \$16.00

Union Platform, Plain..... \$2.00@2.10

Union Platform, Striped..... \$2.15@2.25
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 Chatillon's Favorite..... 40¢
 Chatillon's Grocers' Trip Scales..... 50¢
 Pelouze..... 50¢
 Grocers' and Postal..... New list net
 "The Standard" Portables..... 45¢
 "The Standard" R. R. and Wagon..... 50¢

Scrapers—

Box, 1 Handle..... doz. \$3.25@3.75
 Box, 2 Handle..... doz. \$3.75@4.00
 Ship, No. 1, doz. \$3.50; No. 2..... 2.25@3.40
 Adjustable Box Scraper (S. R. & L. Co.)
 \$6.00..... 40¢@10¢
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 Maine Window Screen Frames 40¢@10¢3 1/2¢
 Phillips' Window Screen Frames..... 60¢
 Porter's Extension Window Screens.....
 50¢@10¢
 Washash Spring Adj. Screen..... 50¢

Screw Drivers—

See Drivers, Screw.

Screws—

Bench and Hand—
 Bench, Iron, # doz. 1 in., \$3.70@3.00;
 1 1/2, \$3.10@3.25; 1 3/4, \$4.00
 Bench, Wood, Beech, # doz. \$3.50@3.75
 Hand, Wood..... 35¢@40¢
 Hand, Grand Rapids..... 35¢
 Hand, R. Bliss Mfg. Co..... 35¢
 Coach, Lag and Hand Rail—
 Lag, Common Point, list Oct. 1,
 '99..... 65¢@5¢
 Coach and Lag, Gimlet Point, list
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 Millers Falls, Roller..... 50¢@10¢
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List Jan. 1, '99.
 Flat or Round Head, Iron..... 50¢
 Flat or Round Head, Brass..... 60¢
 Set (Iron or Steel)..... 60¢
 Sq. Hd. Cap..... 55¢
 Hex. Hd. Cap..... 60¢

Wood—

List Jan. 1, 1900.
 Flat Head, Iron..... 90¢
 Round Head, Iron..... 75¢
 Flat Head, Brass..... 77 1/2¢
 Round Head, Brass..... 78 1/2¢
 Flat Head, Bronze..... 78 1/2¢
 Round Head, Bronze..... 70¢
 Drive Screws..... 80¢
 Note.—An extra 10 or 10¢ is
 often given.

Scroll Saws—See Saws, Scroll.**Scythes—**

Grass Scythes:
 Natural Finish..... per doz. \$3.00
 Pol. Blade..... per doz. \$3.40
 Painted or Bronzed..... per doz. \$3.25
 Weed and Bush..... per doz. \$7.50@7.75

Scythe Snaths—

See Snaths, Scythes.

Seeders—

Raisin—
 Enterprise..... 25¢@30¢

Sets—

Brad Aul and Tool Sets—
 Wood Hdl., 10 Auls doz. \$2.00@2.25
 Wood Hdl., 14 Auls, 6 Tools.....
 doz. \$3.50@2.60
 Alken's Sets, Aw and Tools.....
 No. 30, # doz. \$10.00, 60¢@10¢60¢10¢5¢
 Fray's Adj. Tool Hdl. S. Nos. 1, 113; 2,
 118; 3, 113; 4, 99; 5, 97..... 50¢
 Millers Falls Adj. Tool Hdl. S. No. 1,
 112; No. 4, 112; No. 5, 118..... 15¢@10¢
 Stanley's Explosor:
 No. 1..... \$7.50; No. 2 \$4.00; No. 3,
 \$5.50..... 30¢@10¢30¢10¢10¢

Garden Tool Sets—

Ft. Madison Rakes, Shovels and Hoe.....
 # doz. \$9.00

Shovels and Tongs—

Brass Head.....60¢@50¢@60¢10¢
Iron Head.....60¢@50¢@60¢10¢

Sieves and Sifters—

Hunter's Imitation, gro. \$11.00@12.00
Buffalo Metallic Blue, S. S. & Co., # gr.:
14&16.....16¢18
18&20.....13.80
Electric Light.....# gr. \$10.00
Hunter's Genuine.....# gr. \$12.50
Shaker (Barler's Pat.) Flour Sifters.
doz., \$2.00.....\$35

Sieves, Wooden Rim—

Nestd, 10, 11 and 12 Inch.
Mesh 15, Nestd, doz.....\$0.75@0.80
Mesh 20, Nestd, doz......85@.90
Mesh 24, Nestd, doz.....1.00@1.05

Sinks—**Cast Iron—**

Low list.....60¢@55¢
NOTE.—The low list is now generally
used, but some jobbers use high list.

Wrought Steel—

Columbus Galv'd and Enamelled, 60&5¢
Columbus, Painted.....45¢
L. & G.....50¢

Skeins, Wagon—

Cast Iron.....70¢@70¢10¢
Malleable Iron.....40¢@10¢50¢
Steel.....35¢@35¢5¢
I. I. & B. Co. Steel.....35¢

Slates—

"D" Slates.....50¢@10¢50¢10¢10¢
Unexcelled Noiseless Slates.....
60¢@5¢@50¢@5¢@5¢
Wire Bound.....40¢@10¢50¢
Double Slates, add \$1 case, net.

Slaw Cutters—See Cutters.**Snaps, Harness—**

German.....40¢@40¢10¢
Covert Mfg. Co.:
Deroy.....85¢@5¢
High Grade.....45¢@5¢
Jockey.....40¢@5¢
Trojan.....45¢@5¢

Covert's Saddlery Works:
Banner.....80¢@10¢
Crown.....80¢@10¢
Triumph.....80¢@10¢

W. & E. T. Fitch Co.:
Bristol.....40¢@10¢
Empire.....50¢@5¢
German.....40¢
National.....50¢@5¢
Perfect.....45¢
Clipper.....50¢@5¢
Champion.....40¢
Security.....40¢
Victor.....60¢@5¢

Oral in Commun ty:
Sol d Steel.....85¢@5¢10¢
Sol d Swivel.....45¢@10¢10¢
Sargent's Patent Guarded.....60¢@5¢10¢

Snaths—

Scythe.....45¢@5¢

Snips, Tanners'—See Shears.**Soldering Irons—**

See Irons, Soldering.

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—**Silver Plated—**

Flat Ware.....50¢@10¢@50¢10¢
Wm. Rogers Mfg. Co.....50¢@10¢

Miscellaneous—

German Silver.....60¢@10¢
Wm. Rogers Mfg. Co.:
15¢ German Silver.....60¢
Rogers' Silver Metal.....50¢@10¢

Springs—**Door—**

Gem (Coll).....20¢
Star (Coll).....30¢
Torrey's Rod, 39 in., # doz. \$1.10@1.35
Warner's No. 1, # doz. \$1.50; No. 2,
\$3.40.....55¢@5¢10¢
Victor (Coll).....60¢@10¢@50¢10¢

Carriage, Wagon, &c.

1 1/4 in. and wider...Blk. Hf. Brt. Brt.
Tested and Temp 5 1/4 5 1/4 6 1/2 lb
Oil Tested and
Tempered.....6 1/4 6 1/4 7 1/2 lb
Cliff's Bolster Springs.....3.5
Cliff's Seat Springs.....# pair 55¢

Sprinklers, Lawn—

Enterprise.....25¢@30¢
Philadelphia No. 1, # doz. \$12; No. 2,
\$15; No. 3, \$24.....30¢

Squares—

Nickel plated.... List Jan. 5, 1900
Steel and Iron, # 70¢@70¢5¢
Rosewood Hdl. Try Square and T-
Bevels.....60¢@10¢10¢70¢
Iron Hdl. Try Squares and T-Bevels,
10¢@10¢40¢10¢10¢

Diston's Try Sq. and T-Bevels.....50¢@10¢**Squeezers—****Lemon—**

Wood, Common, gro., No. 0, \$5.25
@ \$5.50; No. 1, \$6.25@6.50.
Wood, Porcelain Lined:
Cheap.....doz. \$2.00@3.75
Good Grade.....doz. \$3.00@3.50

Tinned Iron.....doz. \$0.75@1.25
Iron, Porcelain Lined doz. \$3.90@5.25
Jennin's Star.....# doz. \$1.85@1.90
Klug.....# doz. \$3.00

Staples—

Barbed Blind.....lb. 9¢@10¢
Electricians', Association list, 75¢@10¢
Fence Staples, same price as Barbed
Wire. See Trade Report.
Poultry Netting.....80¢@10¢
Grand Crossing Tack Co.'s list.....75¢@10¢

Steels, Butchers'—

Dick's.....40¢
Foster Bros.....30¢
C. & A. Hoffmann's.....40¢
Nichols Bros.....50¢

Steelyards.....25¢@5¢10¢**Stocks and Dies—**

Blacksmiths'.....40¢
Gardner.....50¢
Green River.....25¢
Lightning Screw Plate.....25¢
Little Giant.....25¢
Rever's New Screw Plates.....25¢@30¢
Curtis Reversible Ratchet Die Stock, 35¢

Stone—**Scythe Stones—**

Pike Mfg. Co., list '95-'96.....83¢@5¢
Cleveland Stone Co., list Nov., '98, 83¢@5¢

Oil Stones, &c.

Pike Mfg. Co.:
Hindustan No. 1, # doz. 8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra.....33¢@10¢
5 to 5 in.....80¢
Turkey Slips.....\$1.50
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 5¢@10¢
Arkansas Stone, No. 1, 5¢@10¢
Tanite Mills:
Emery Oil, # doz. \$5.00.....50¢@60¢

Stoners—**Cherry—**

Enterprise.....25¢@30¢

Stops, Bench—

Millers Falls.....15¢@10¢
Morrill's...# doz., No. 1, \$10.00; No. 2,
\$11.00, 40¢@20¢

Stops, Window—

Ives' Patent.....25¢@5¢
Taplin's.....45¢
Wilcox, Steel, per doz., \$0.00.....50¢

Stove Boards—

See Boards, Stove.

Stove Polish—See Polish, Stove.**Straps, Box—**

Cary's Universal, case lots.....20¢@10¢

Stretchers, Carpet—

Cast Iron, Steel Points.....doz. 55¢@55¢
Cast Steel, Polished.....doz. \$2.25
Socket.....doz. \$1.75

Stuffers, Sausage—

Miles' Challenge, # doz. \$30.....50¢@50¢5¢
Enterprise Mfg. Co.....25¢@25¢7¢
National Specialty Mfg. Co., list Jan.
1, '97.....80¢

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks:
American Blued.....90¢@20¢10¢
American Tinned.....90¢@20¢10¢
American Cut Tacks.....85¢@10¢5¢10¢10¢

Swedes Iron Tacks.....90¢@20¢10¢
Swedes Upholsterers' Tacks.....90¢@20¢10¢
Gimp Tacks.....90¢@20¢10¢
Lace Tacks.....90¢@20¢10¢
Trimmers' Tacks.....90¢@20¢10¢
Looking Glass Tacks.....70¢@70¢10¢
Bill Posters' and Railroad Tack.....90¢@20¢10¢
Hungarian Nails.....80¢@5¢10¢15¢
Common and Patent Brads.....70¢@5¢
Trunk and Clout Nails.....75¢@75¢10¢5¢

NOTE.—The above prices are for
freight weights. An extra 5% is given
Star Weights and an extra 10% on
Standard Weights.

Miscellaneous—

Double Point Tacks.....9¢ 4 or 5 10¢
Steel Wire Brads, R. & E. Mfg.
Co.'s list.....50¢@10¢80¢
See also Nails, Wire.

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. \$3.20
Emerald, S. S. & Co.....50-gal. \$4.00
Queen City S. S. & Co., 80-gal.....\$3.50
Queen City S. S. & Co., 60-gal.....\$4.25

Tapes, Measuring—

American Asses' Skin, 90¢ 4 or 5 10¢
Patent Leather.....25¢@50¢5¢
Steel.....40¢@40¢5¢
Chesterman's.....25¢@25¢5¢

Eddy's Steel.....40¢@40¢5¢
Eddy's Metallic.....33¢@33¢5¢
Keuffel & Esser Co., Steel and Metallic,
Lower list, 1899.....35¢
Lufkin's Steel.....33¢@35¢
Lufkin's Metallic.....30¢@35¢

Thermometers—

Tin Case.....80¢@30¢10¢

Ties, Bale—Steel.

Standard Wire.....50¢@10¢5¢

Ties, Wall—

Cleveland, Steel.....# 1000, \$10.00

Tinners' Shears, &c.—

See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Piced, sold
very generally at net prices.

**Tire Benders, Upsetters,
&c.—See Benders and Upset-
ters, Tire.****Tobacco Cutters—**

See Cutters, Tobacco

Tools—

Coopers'—
L. & I. J. White.....20¢@20¢5¢

Saw—
Atkins' new list.....40¢
Simonds' Improved.....33¢@5¢
Simonds' Crescent.....25¢

Ship—

L. & I. J. White.....25¢

Transom Lifters—

See Lifters, Transom.

Traps—Game—

Oneida Pattern.....70¢@10¢75¢5¢
Newhouse.....45¢@50¢
Hawley & Norton.....65¢@70¢
Victor (Oneida Pattern).....75¢@75¢10¢
Star (Blake Pattern).....65¢@10¢70¢5¢

Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 9¢@10¢
Mouse, Round or Square Wire.....
doz. \$0.85@1.00

Marty French Rat and Mouse Traps
(Genuine):
No. 1, Rat, # doz. \$12.00; case of 24,
\$10.50
No. 3, Rat, # doz. \$5.50; case of 50,
\$5.00
No. 3 1/2, Rat, # doz. \$1.50; case of 72,
\$4.00
No. 4, Mouse, # doz. \$3.50; case of 72,
\$2.75
No. 5, Mouse, # doz. \$2.75; case of 150,
\$2.25

Schuyler's Rat Killer, No. 1, # gr. \$30.00; No. 2,
gr. \$30.00; Mouse, No. 3,
\$18.00.....50¢
Out o' Sight, Mouse, No. 1, # doz. 60¢;
Rat, No. 2, \$1.35; Mole, \$0.00;
Gopher, \$1.50; Stop Thief, No. 1,
\$1.25; No. 2, \$1.50.

Flv—
Balloon, Globe or Acme.....
doz. \$1.15@1.25; gro. \$12.00@14.00
Harper, Champion or Paragon
doz. \$1.25@1.40; gro. \$13.50@15.00

Trimmers, Spoke—

Bonney's No. 1 and 2.....40¢
Stearns.....25¢

Trowels—

Di ston Brick and Pointing.....30¢
Di ston Plastering.....25¢
Di ston "Standard Brand" and Ga-
den Trowels.....40¢
Never-Break steel Garden Trowels.....
gro. \$7.00
Peace's Plastering.....80¢
Rose Brick and Plastering.....25¢@5¢
Woodrugh & McParlin, Plastering, 25¢@10¢

Trucks, Warehouse, &c.—

R. & L. Block Co.'s list.....40¢
Daisy Stove Trucks, Improved pattern
doz. \$21.00

Tubs, Wash—

No. 1 2 3
Galvanized, per doz. \$5.00 5.50 6.00
Galvanized S. S. & Co., with Wringer
Attachment, # doz. No. 10, \$7.35
No. 20, \$7.75; No. 30.....\$8.25

Twine—

Carload lots f.o.b. New York, Phila-
delphia or Boston.
White Steel, 500 ft. to lb. per lb. 11 1/4¢
Standard, 500 ft. to lb. per lb. 11 1/4¢
Manila, 600 ft. to lb. per lb. 11 1/4¢
Pure Manila, 650 ft. to lb. per lb. 15 1/4¢
Less than carloads add 1/4¢ per lb.

Miscellaneous—

Flax Twine.....BO B.
No. 2, 1/4 and 1/2-lb. Balls.....25¢ 26¢
No. 12, 1/4 and 1/2-lb. Balls.....25¢ 26¢
No. 18, 1/4 and 1/2-lb. Balls.....15¢ 19¢
No. 24, 1/4 and 1/2-lb. Balls.....15¢ 19¢
No. 36, 1/4 and 1/2-lb. Balls.....15¢ 18¢
Chalk Line, Cotton, 1/2-lb. Balls.....
18¢@20¢
Cotton Mops, 6, 9, 12 and 15 lb. to
doz.....7¢@8¢
Cotton Wrapping, 5 Balls to lb.....
9¢@16¢
American 2-Ply Hemp, 1/4 and 1/2-lb.
Balls.....15¢@15¢
American 3-Ply Hemp, 1-lb. Balls.....
15¢@15¢

India 2-Ply Hemp, 1/4 and 1/2-lb.
Balls (Spring Twine).....10¢
India 3-Ply Hemp, 1-lb. Balls.....10¢
India 3-Ply Hemp, 1 1/2-lb. Balls.....5¢
2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls.....
8¢@8¢

Mason Line, Linen, 1/2-lb. Balls.....45¢
No. 264 Mattress, 1/4 and 1/2-lb. Balls 55¢
Wool.....7¢

Vises—

Solid Box.....40¢@10¢
Bonney's Saw Vises.....40¢@10¢

Parallel—

Athol Machine Co.:
Simpson's Adjustable.....40¢
Standard.....40¢
Amateur.....25¢
Bonney's.....40¢@10¢
Fisher & Norris Double Screw.....15¢@10¢
Hollands.....40¢@40¢10¢
Lewis Tool Co.....20¢@30¢
Massey's Perfect.....15¢@30¢
Massey's Clincher.....30¢@40¢
Merrill's.....20¢
Miller's Falls.....low list 10¢
Parker's:
Victor.....20¢@25¢
Regulars.....20¢@25¢
Vulcan's.....40¢@45¢
Combination Pipe.....55¢@60¢
Prentiss.....20¢@25¢
Sargent's.....60¢@60¢10¢
Simpson's Adjustable.....40¢
Sneidker's X. L.....20¢@25¢
Stephens.....20¢@25¢
Toles' Woodworking.....25¢
Van, W. & W. Hd. W. C.....40¢

Saw Filers—

Bonney's, No. 1, \$13; No. 3, \$6.50@10¢
Di ston's D 3 Clamp and Guide, # doz
\$30.....25¢
Reading.....40¢@10¢
Rentworth's Rubber Jaw, Nos. 1, 2
and 3.....30¢@75¢

Miscellaneous—

Signal & Keeler Combination Pipe
Vise.....80¢
Parker's Combination Pipe:
87 Series.....80¢
187 Series.....60¢@5¢
No. 570.....40¢

Wads—Price Per M.

B. E., 11 up.....60¢
B. E., 9 and 10.....70¢
B. E., 8.....80¢
B. E., 7.....80¢
P. E., 11 up.....\$1.00
P. E., 9 and 10.....1.25
P. E., 8.....1.50
P. E., 7.....1.50
Ely's B. E., 11 and larger.....\$1.70@1.75
Ely's P. E., 12 to 20.....\$3.00@3.25

Wagon Jacks—

See Jacks, Wagon.

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40¢

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....60¢@60¢7 1/4¢
Unground.....65¢@65¢10¢
White Enamelled Ware.....
Maslin Kettles.....75¢@10¢75¢10¢5¢
Boilers and Saucepans.....55¢@55¢5¢
Tinned Boilers and Saucepans.....
55¢@55¢5¢

See also Pots, Glue.**Enamelled—**

Agate Nick 1 Steel Ware, list July '99, 40¢
Granite Ware, list Jan. 1, '94, revised
Jan. 2, '95.....40¢@10¢
Second Quality, Agate Nickel Steel.....55¢
Second Quality, Granite.....70¢@10¢70¢10¢10¢

Iron Clad:
Peppered Ware, high list.....70¢
P. Rogers Ware, special list.....33¢
Mottled Ware, high list.....70¢
Never Break Enamelled.....50¢@50¢10¢

Tea Kettles—

Galvanized Tea Kettles:
Inch.....6 7 8 9
Each.....50¢ 55¢ 60¢ 70¢

Steel Hollow Ware.

Avery Spiders & Griddles.....65¢@65¢5¢
Avery Kettles.....60¢
Porcelain.....50¢@50¢10¢
Never Break Spiders and Griddles.....
65¢@65¢5¢
Never Break Kettles.....60¢@60¢10¢
Solid Steel Spiders & Griddles.....65¢@5¢
Solid Steel Kettles.....60¢
Solid Steel Ware, Enamelled.....55¢@5¢

Silver Plated Hollow—

William Rogers Mfg. Co.....40¢@19¢

Washboards—

Solid Zinc.....# doz
Crescent, family size, bent frame, \$3.00
Red Star, laundry size, stationary
protector.....\$4.25
Double Zinc Surface:
Saginaw Globe, family size, station-
ary protector.....\$2.65
Wilson, family size, bent frame.....\$4.75
Single Zinc Surface:
Nalad protector, family size, open
back perforated.....\$2.40
Saginaw Globe, protector, family
size, ventilated back.....\$2.25
Wilson, bent frame, family size,
ventilated back.....\$2.25

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National Tube Co., Pittsburgh, Pa.

Boiler Tube Cleaners

Union Boiler Tube Cleaner Co., Pittsburgh, Pa.

Boilers, Steam

Babcock & Wilcox Co., 30 Cortlandt St.

Caball Sales Dept., Pittsburgh, Pa.

Harrison Safety Boiler Wks., Phila., Pa.

Pollock, W. B. Co., Youngstown, O.

Watson, E. P. Elizabeth, N. J.

Wetherill, Robt. & Co., Chester, Pa.

Bolt Cutters

Chambers Bros., Philadelphia, Pa.

Heilwig Mfg. Co., St. Paul, Minn.

Porter, H. K., Boston, Mass.

Bolt and Nut Machinery

Acme Machinery Co., Cleveland, Ohio.

Ajax Mfg. Co., Cleveland, Ohio.

Detrick & Harvey Mch. Co., Baltimore, Md.

National Machinery Co., Tiffin, Ohio.

Bolts

American Iron & Steel Mfg. Co., Lebanon, Pa.

Blake & Johnson, Waterbury, Conn.

Dunham Nut Co., Unionville, Conn.

Franklin-Moore Co., Winsted, Conn.

Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.

Ladd, W. C., Bristol, Conn.

National Elastic Nut Co., Milwaukee, Wis.

Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.

Port Chester Bolt & Nut Co., Port Chester, N. Y.

Rhode Island Tool Co., Providence, R. I.

Rockford Bolt Works, Rockford, Ill.

Shelton Co., Birmingham, Conn.

Books

Williams, David Company, 292-298 William Street, N. Y.

Boring Machines, Pneumatic

Chicago Pneumatic Tool Co., Chicago, Ill.

Standard Pneumatic Tool Co., Chicago, Ill.

Box Fixtures

Cary Mfg. Co., 19-21 Roosevelt St., N. Y.

Box Hamps and Hinges

Cary Mfg. Co., 19-21 Roosevelt St., N. Y.

Box Straps and Corners

Cary Mfg. Co., 19-21 Roosevelt St., N. Y.

Boxes, Hdw. Shelf, &c.

Green, A. H. & Co., 22 Park Place, N. Y.

Jones, Jesse, Paper Box Co., Phila., Pa.

Moore, C. P., Ravenswood, W. Va.

Brackets, Shelf

Atlas Mfg. Co., New Haven, Conn.

Griffin Mfg. Co., Allegheny, Pa.

Brass and Copper

Ansonia Brass & Copper Co., 99 John St., N. Y.

Bridgeport Brass Co., Bridgeport, Ct.

Davol, John & Sons, 100 John, N. Y.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Plume & Atwood Mfg. Co., 29 Murray St., N. Y.

Randolph-Clowes Co., Waterbury, Conn.

Rutter, A. T., 256 Broadway, N. Y.

Scoville Mfg. Co., Waterbury, Conn.

Shimer, H. M. & Co., Phila., Pa.

Waterbury Brass Co., 60 Centre St., N. Y.

Brass and Copper Rods

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Copper Wire

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Butt Hinges

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Tiebout, W. & J., 118 Chambers.

Brass Butts

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass Founders

Clark, John W., Albany, N. Y.

Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.

Independent Foundry Co., Port Chester, N. Y.

Reeves, Paul S., Philadelphia, Pa.

Ryan, J. J. & Co., Chicago, Ill.

Brass Goods

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brass and Iron Jack Chains

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Brazers

White Mfg. Co., Chicago, Ill.

Bridge Builders

Berlin Iron Bridge Co., E. Berlin, Conn.

Boston Bridge Works, Boston, Mass.

Illinois Steel Co., Chicago, Ill.

Scaife, Wm. B. & Sons, Pittsburgh, Pa.

- Link-Belt Engineering Co., Phila., Pa.**
McKay Jas. & Co., Pittsburgh, Pa.
Onelda Community, Ltd., Niagara Falls
- Chula Plants**
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.
- Cherry Stoners.**
Enterprise Mfg. Co., Philadelphia, Pa.
- Chisels**
Buck Bros., Millbury, Mass.
Buck, Chas., Millbury, Mass.
White, L. & I. J. Co., Buffalo, N. Y.
- Christmas Tree Holders**
North Bros. Mfg. Co., Philadelphia, Pa.
- Chucks**
Cushman Chuck Co., Hartford, Conn.
Doebler Mfg. Co., Middletown, Conn.
Holland Mfg. Co., Erie, Pa.
Horton, E. & Son Co., Windsor Locks, Ct.
Ideal Machine Works, Hartford, Conn.
Pratt Chuck Co., Frankfort, N. Y.
Skinner Chuck Co., New Britain, Conn.
Standard Tool Co., Cleveland, O.
Union Mfg. Co., 103 Chambers, N. Y.
Whitton, D. E. Mach. Co., New London, Conn.
- Circular Sawing Machines**
Kiddier, R. E., Worcester, Mass.
- Clamps**
Besley, U. H. & Co., Chicago, Ill.
Hammer & Co., Branford, Conn.
- Clipping Machines**
Amer. Shearer Mfg. Co., Nashua, N. H.
Chicago Flexible Shaft Co., Chicago, Ill.
McCoy, Jos. F. Co., 26 Warren St., N. Y.
Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.
- Clothes Dryers**
Hill Dryer Co., Worcester, Mass.
- Clothes Pins**
Clark, J. R. Co., Minneapolis, Minn.
U. S. Clothes Pin Co., Montpelier, Vt.
- Coal**
Washington Coal & Coke Co., Dawson, Pa.
Wister, Francis, Philadelphia, Pa.
- Coal Cars**
Lansing Wheelbarrow Co., Lansing, Mich.
- Coal Shutes**
Lansing Wheelbarrow Co., Lansing, Mich.
- Coasters**
Eclipse Bicycle Co., Elmira, N. Y.
- Coffee and Spice Mills**
Bronson Co., Cleveland, O.
Parker, Chas. Co., Meriden, Conn.
- Coke**
Frick, H. C. Coke Co., Pittsburgh, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Washington Coal & Coke Co., Dawson, Pa.
Wister, Francis, Philadelphia, Pa.
- Cold Saws**
Lucas & Gilem, Philadelphia, Pa.
Q. & C. Co., Chicago, Ill.
- Collectors**
Creditors Legal Union, 902 Broadway, N. Y.
- Compressed Air Machinery**
Phila. Pneumatic Tool Co., Phila., Pa.
- Conductor Pipe**
Berger Bros. Co., Philadelphia, Pa.
Cincinnati Corrugating Co., Piqua, O.
- Conveying Machinery**
Aultman Co., Canton, Ohio.
Brown Hoisting & Conveying Machine Co., Cleveland, Ohio.
California Wire Works, San Francisco, Cal.
Glinther, G. H., Pittsburgh, Pa.
Hunt, C. W. Co., W. New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
- Cooking Utensils**
Cleveland Stamping & Tool Co., Cleveland, O.
- Copper**
Ansonia Brass & Copper Co., 99 John St., N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.
- Copper Hammers**
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Copper Rail Bands**
American Steel & Wire Co., Chicago, Ill.
- Copper Rivets and Burrs**
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Copper Tacks and Nails**
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.
- Copper Wire, Bare and Insulated**
American Steel & Wire Co., Chicago, Ill.
- Cordage**
Samson Cordage Works, Boston, Mass.
Silver Lake Co., Boston, Mass.
- Core Ovens**
Miller Core Oven Co., Brightwood, Mass.
- Cork Screws and Cork Pullers**
Erie Specialty Co., Erie, Pa.
- Corn Hooks**
Withington & Cooley Mfg. Co., Jackson, Mich.
- Corn Huskers**
Wilcox Mfg. Co., Aurora, Ill.
- Corrugated Iron and Steel**
Cincinnati Corrugating Co., Piqua, O.
Scalfe, Wm. H. & Sons, Pittsburgh.
Struthers Iron & Steel Co., Struthers, O.
- Cotton Ties**
American Steel Hoop Co., Pittsburgh, Pa.
- Counting Machines**
Durant, W. N., Milwaukee, Wis.
Veeder Mfg. Co., Hartford, Conn.
- Couplings, Compression**
Sennett, Geo. B. Co., Youngstown, O.
- Cow Ties**
Garland Chain Co., Rankin, Pa.
Onelda Community, Ltd., Niagara Falls, N. Y.
- Cranes**
Brown Hoisting & Conveying Mch. Co., Cleveland, O.
Chisholm & Moore Mfg. Co., Cleveland, O.
Cleveland Crane & Car Co., Cleveland, O.
Northern Engineering Works, Detroit, Mich.
Pawling & Harnischfeger, Milwaukee, Wis.
Reading Crane & Hoist Wks., Reading, Pa.
Ridgway, Craig & Son Co., Coatesville, Pa.
Sellers, Wm. & Co., Inc., Phila., Pa.
Spindel, J. G., Reading, Pa.
- Crank Handles**
Norwood Bicycle Co., Cincinnati, O.
- Crucibles**
Dixon, Jos. Crucible Co., Jersey City, N. J.
- Cupolas**
Paxson, J. W. Co., Philadelphia, Pa.
- Cutlery**
Cattaraugus Cutlery Co., Little Valley, N. Y.
Chaffin, John & Sons, 85 to 89 Cliff St., N. Y.
Dane, Stoddard & Co., Boston.
Goodell Co., Antrim, N. H.
Kimball, C. J. Co., Bannington, N. H.
Supple Hardware Co., Phila., Pa.
Wiebusch & Hilger, Ltd., 9 to 15 Murray St., N. Y.
- Cutting Off Machines**
Hurlbut Rogers Mach. Co., So. Sudbury, Mass.
Lucas & Gilem, Philadelphia, Pa.
- Cyclometers**
Veeder Mfg. Co., Hartford, Conn.
- Cylinders, Air and Gas**
Harrisburg Pipe Bending Co., Harrisburg, Pa.
- Dampers**
Williams, A. C., Ravenna, O.
- Diamond Tools**
Dickinson, Thos. L., 45 Vesey St., N. Y.
- Dies**
Adrian Mach. Works, Brooklyn, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Ferracute Mach. Co., Bridgeton, N. J.
Hay-Budden Mfg. Co., Brooklyn, N. Y.
Richard, F. J. Mch. Co. Ltd., Bloomsburg, Pa.
Wilson & Smith, Worcester, Mass.
- Disc Sharpeners**
Novelty Mfg. Co., Rock Island, Ill.
- Door Bells.—See Bells and Gongs.**
- Door Checks and Springs**
Bardley, Jos., 147 151 Baxter St., N. Y.
Larimer Mfg. Co., Pittsburgh, Pa.
Pullman Sash Balance Co., Rochester, N. Y.
Toier, John, Sons & Co., Newark, N. J.
- Door Holders**
Brohard Co., Phila., Pa.
Caldwell Mfg. Co., Rochester, N. Y.
- Draught Springs**
Burditt & Williams, Boston, Mass.
- Draw Benches**
Richard, F. J. Mch. Co., Ltd., Bloomsburg, Pa.
Thompson, Hugh L., Waterbury, Ct.
- Drill Grinders**
Fuller Mfg. Co., Kalamazoo, Mich.
Heald, L. S. & Son, Barre, Mass.
Washington Shops of Worcester Polytechnic Inst., Worcester, Mass.
- Drilling Machines**
Baker Bros., Toledo, O.
Barnes, W. F. & John Co., Rockford, Ill.
Baush & Harris Mch. Tool Co., Springfield, Mass.
Bickford Drill & Tool Co., Cin., Ohio.
Bullard Machine Tool Co., Bridgeport, Ct.
Burnham, Geo. Co., Worcester, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Cincinnati Mch. Tool Co., Cincinnati, O.
Dallett, Thos. H. & Co., Philadelphia.
D'Amour & Littledale Mch. Co., 151 Worth St., N. Y.
Davis, W. P., Machine Co., Rochester, N. Y.
Detrick & Harvey Mch. Co., Baltimore, Md.
Harrington, E. Son & Co., Phila., Pa.
Hill, Clarke & Co., Boston, Mass.
Hofer Mfg. Co., Freeport, Ill.
Prentice Bros., Worcester, Mass.
Quint, A. D., Hartford, Conn.
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Slate Dwight Machine Co., Hartford, Ct.
Stow Flexible Shaft Co., Phila., Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.
Woodward & Rogers, Hartford, Conn.
York, S. M. Co., Cleveland, O.
- Drilling Machines, Automatic**
Gould & Eberhardt, Newark, N. J.
- Drop Forgings**
Belden Machine Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn.
Chicago Drop Forging & Fdry. Co., Kensington, Ill.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Indianapolis Drop Forging Co., Indianapolis, Ind.
- Keystone Drop Forge Co., Philadelphia.**
Kilborn & Bishop Co., New Haven, Conn.
R. I. Tool Co., Providence, R. I.
Scranton Forging Co., Scranton, Pa.
Seward, M. & Son Co., New Haven, Ct.
Springfield Drop Forging Co., Springfield, Mass.
Standard Drop Forging Co., Boonton, N. J.
Strieby & Foote Co., Newark, N. J.
Transue & Williams Co., Alliance, O.
Williams, J. H. & Co., Brooklyn, N. Y.
Wyman & Gordon, Worcester, Mass.
- Drop Hammers**
Billings & Spencer Co., Hartford, Conn.
Merrill Bros., Brooklyn, N. Y.
Williams, White & Co., Moline, Ill.
- Drop Presses**
Manville, E. J. Mch. Co., Waterbury, Ct.
Miner & Peck Mfg. Co., New Haven, Ct.
Mossberg & Granville Mfg. Co., Providence, R. I.
Vulcan Iron Works, Chicago, Ill.
- Dumb Waiters**
Energy Mfg. Co., Philadelphia, Pa.
Spindel, J. G., Reading, Pa.
Storm Mfg. Co., Newark, N. J.
Variety Machine Co., Warsaw, N. Y.
- Dump Cars**
Atlas Holt & Screw Co., Cleveland, O.
- Dynamoes**
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Hanson & Van Winkle Co., Newark, N. J.
Stewart Electrical Co., Cincinnati, O.
Zucker & Levett & Loeb Co., 536-550 W. 25th St., New York.
- Eave Troughs**
Kanneberg Rfg. Co., Canton, O.
- Eave Trough Hangers**
Berger Bros. Co., Philadelphia, Pa.
Oatman Bros., Medina, O.
- Edge Tools**
Buck, Chas., Millbury, Mass.
Buck Bros., Millbury, Mass.
Ferro-Carbon Castings Co., Phila., Pa.
White, L. & I. J. Co., Buffalo, N. Y.
- Egg Beaters**
Lyon, Nelson, Albany, N. Y.
Standard Co., Boston, Mass.
- Egg Opener**
Hartigan, W. R., Collinsville, Ct.
- Electric Bells and Supplies**
Strander, W. R. & Co., 204 Fulton St.
- Electric Controllers**
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Electric Controller & Supply Co., Cleveland, O.
- Electric Lighting and Power Apparatus**
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
- Electrical Machinery**
Stewart Electrical Co., Cincinnati, O.
- Electrical Supplies**
Mianus Electric Co., Mianus, Conn.
- Elevators. Makers of**
Eastern Machinery Co., New Haven, Ct.
Link-Belt Engineering Co., Phila., Pa.
Energy Mfg. Co., Phila., Pa.
Louisville Fdry. & Mch. Co., Louisville, Ky.
Morse, Williams & Co., Phila., Pa.
Ridgway, Craig & Son Co., Coatesville, Pa.
Spindel, J. G., Reading, Pa.
Variety Machine Co., Warsaw, N. Y.
Warner Elevator Mfg. Co., Cincinnati, O.
- Elevator Buckets**
Clark, W. J. & Co., Salem, O.
Cleveland Elevator Bucket Co., Cleveland, O.
- Elevator Enclosures and Cabs**
Ludlow Saylor Wire Co., St. Louis, Mo.
- Emery**
Tanite Co., Stroudsburg, Pa.
- Emery Wheels**
American Emery Wheel Works, Providence, R. I.
Best, L. & Vesey St., N. Y.
Nazi & Bassett, Phila., Pa.
Northampton Emery Wheel Co., Leeds, Mass.
Norton Emery Wheel Co., Worcester, Mass.
Safety Emery Wheel Co., Springfield, O.
Scranton Corundum & Emery Wheel Co., Scranton, Pa.
Springfield Mfg. Co., Bridgeport, Conn.
Star Corundum Wheel Co., Detroit, Mich.
Sterling Emery Wheel Co., Tiffin, O.
Tanite Co., Stroudsburg, Pa.
Vitified Emery Wheel Co., Westfield, Mass.
Zacharias & Co., Asbury Park, N. J.
- Emery Wheel Dresser**
Chicago Screw Co., Chicago, Ill.
Dickinson, Thos. L., 45 Vesey St., N. Y.
- Engineers and Contractors**
Allen, Henry, Pittsburgh, Pa.
Erikson, Edw. E., Pittsburgh, Pa.
Filer & Stowell Co., Milwaukee, Wis.
Heyl & Patterson, Pittsburgh, Pa.
Huber, S. V. Co., Pittsburgh, Pa.
Kennedy, Julian, Pittsburgh, Pa.
Kennedy, Walter, Pittsburgh, Pa.
Lamond, David, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
McClure, G. W. Son & Co., Pittsburgh, Pa.
Miller Bros. & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Riter Conley Mfg. Co., Pittsburgh, Pa.
Smythe, S. R. Co., Inc., Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.
Thompson, Hugh L., Waterbury, Ct.
Wellman Seaver Engineering Co., Cleveland, O.
- Engines**
Gas.
Diesinger, C. H. A. & Bro., Wrightsville, Pa.
Mietz, Aug., 125-128 Mott St., N. Y.
Northern Engineering Works, Detroit, Mich.
Woolley Fdry. & Mch. Wks., Anderson, Ind.
- Gasoline**
Charter Gas Engine Co., Sterling, Ill.
Weber Gas & Gasoline Engine Co., Kansas City, Mo.
Watkins, F. M., Cincinnati, O.
- Kerosene.**
Mietz, Aug., 125-128 Mott St., N. Y.
- Steam.**
Albis, E. P. Co., Milwaukee, Wis.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Filer & Stowell Co., Milwaukee, Wis.
Newport News Shipbuilding & Dry Dock Co., 1 Broadway, N. Y.
Senne t Geo. B. Co., Youngstown, O.
Southwark Fdry. & Mch. Co., Philadelphia, Pa.
Sturtevant, B. F. Co., Boston, Mass.
Tod, William & Co., Youngstown, O.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.
Wetherill, Robt. & Co., Chester, Pa.
- Engines, Second Hand**
Everson, B. M., Pittsburgh, Pa.
- Engravers**
Mugford A., Hartford, Conn.
- Expanding Mandrels**
LeCount, Wm. G., 50 Norwalk, Conn.
- Expansion Belts**
Church, Isaac Toledo, O.
McCabe Hanger Mfg. Co., 533-543 W. 23d St., N. Y.
- Seaman D. C. & Co., Philadelphia, Pa.**
Steward & Komanie Mfg. Co., Phila., Pa.
- Farmers' Tools.**
Heller Bros. & Co., Newark, N. J.
- Faucets, Wooden**
Boston & Lockport Block Co., Boston, Mass.
Sommer's, John, Son, Newark, N. J.
- Feed Cutters**
Silver Mfg. Co., Salem, O.
- Feed Water Heaters and Purifiers**
Harrisburg Pipe Bending Co., Harrisburg, Pa.
Harrison Safety Boiler Works, Philadelphia, Pa.
Kelly, B. F. & Son, 91 Liberty St., N. Y.
National Pipe Bending Co., New Haven.
Patterson, F. L., 136 Liberty St., N. Y.
Taunton Locomotive Mfg. Co., Taunton, Mass.
Webster, Warren & Co., Camden, N. J.
- Fence Ratchets**
Electric Oil Stove Co., Jackson, Mich.
- Fencing, Iron and Wire**
Adam, W. J., Joliet, Ill.
American Steel & Wire Co., Chicago, Ill.
Barnum, E. T., Detroit, Mich.
Bolles, J. E. Iron & Wire Works, Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
DeKalb Fence Co., DeKalb, Ill.
Detroit Fence Co., Detroit, Mich.
Dwiggins Wire Fence Co., Anderson, Ind.
Elli & Haltenberger, Indianapolis, Ind.
Frost Wire Fence Co., Cleveland, O.
Gilbert & Bennett Mfg. Co., 42 Cliff St.
Hartman Mfg. Co., 309 Broadway, N. Y.
Kilmer Wire Mfg. Co., Chicago, Ill.
Ludlow Saylor Wire Co., St. Louis, Mo.
Stewart Iron Works, Cincinnati, Ohio.
- Ferro-Chromium**
Willson Aluminum Co., 99 Cedar Street, N. Y.
- Files and Rasps**
Manufacturers of
Arcade File Works, Anderson, Ind.
Barnett, G. & H. Co., 41 & 43 Richmond Phila.
Diaston, Henry & Sons, Inc., Phila., Pa.
Heller Bros. Co., Newark, N. J.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.
Stokes Bros. Mfg. Co., Freehold, N. J.
- Filing Cabinets.**
Globe-Wernicke Co., Cincinnati, O.
- Filters**
Scalfe, Wm. B. & Sons, Pittsburgh, Pa.
- Finished Castings**
Franklin, H. H. Mfg. Co., Syracuse, N. Y.
- Fire Brick**
Borgner, Cyrus, Philadelphia, Pa.
Gardner Bros., Cumberland, Md.
Maurer, H. & Son, 430 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Fire Brick Co., Taunton, Mass.
Staten Island Clay Co., Woodbridge, N. J.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
- Fire Sprinklers**
International Sprinkler Co., Phila., Pa.
- Fishing Tackle**
Dane, Stoddard & Co., Boston, Mass.
- Flanged Fittings**
Latrobe Steel Co., Philadelphia, Pa.
- Flexible Shafting**
Chicago Flexible Shaft Co., Chicago, Ill.
Stow Flexible Shaft Co., Phila., Pa.
Stow Mfg. Co., Binghamton, N. Y.
Union Boiler Tube Cleaner Co., Pittsburgh, Pa.
- Flint and Emery Paper**
Baeder, Adamson & Co., Phila., Pa.
- Floor Hinge**
Lawson Mfg. Co., Milwaukee, Wis.
- Flue Cleaners**
Jackson Flue Scraper Co., Jackson, Mich.
Jarecki Mfg. Co., Erie, Pa.
- Fly Killers**
Bigelow, J. F., Worcester, Mass.
- Fly Traps**
Meyers, Fred. J. Mfg. Co., Hamilton, O.
- Foot Pumps.**
Gleason-Peters Air Pump Co., Houston and Mercer Sts., N. Y.
Rome Mfg. Co., Rome, N. Y.
- Foot Rests**
Star Heel Plate Co., Newark, N. J.
- Forges, Portable.**
Bradley Co., Syracuse, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Forge Co., Lancaster, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel

Baker, Jas. H. Mfg. Co., Pittsburgh, Pa.
Bethlehem Steel Co., S. Bethlehem, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila., Pa.
Frank-Rudden Mfg. Co., Brooklyn, N. Y.
Otis Steel Co., Ltd., Cleveland, Ohio.
Pittsburgh Shear, Knife & Machine Co., Pittsburgh, Pa.
Titusville Forge Co., Titusville, Pa.

Forks, Hay and Manure

Iowa Farming Tool Co., Ft. Madison, Ia.
Withington & Cooley Mfg. Co., Jackson, Mich.

Foundry Facings

Obermayer, S. Co., Cincinnati, O.

Foundry Lamps

Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Paxson, J. W. Co., Phila., Pa.

Foundry Supplies

Gilmour, J., Bennett Building, N. Y.
Obermayer, S. Co., Cincinnati, Ohio.
Osborn Mfg. Co., Cleveland, O.
Paxson, J. W. Co., Phila., Pa.
Smooth On Mfg. Co., Jersey City, N. J.

Friction Clutches

Eastern Machinery Co., New Haven, Ct.

Furnaces, Oil, Gas and Coal

Rockwell Engineering Co., 26 Cortlandt St., N. Y.

Fuses

Ensign Bickford & Co., Simsbury, Ct.

Gages

Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware

Keen & Hagerly Mfg. Co., Baltimore.

Galvanizers

Metallic Basket Co., Rochester, N. Y.

Galvanizing

Blackman & King, 801 Greenwich St., N. Y.

Cleveland Galvanizing Works, Cleveland, O.

Galvanizing Process

U. S. Electro Galvanizing Co., 348 Broadway, N. Y.

Garden Rakes

Jenkins Iron & Tool Co., Howard, Pa.

Garden Tools

Jenkins Iron & Tool Co., Howard, Pa.

Withington & Cooley Mfg. Co., Jackson, Mich.

Gas Brollers

Gas Stove Utensil Co., 73 Murray St., N. Y.

Gas Compositometer

Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.

Gas Compressors

Norwalk Iron Works Co., So. Norwalk, Conn.

Gas Engine Igniters

Dayton Electrical Mfg. Co., Dayton, O.

Gas Furnaces

Chicago Flexible Shaft Co., Chicago, Ill.

Gaskets

Canfield, H. O., Bridgeport, Conn.

Gas Producers

Duff Atkins Co., Allegheny, Pa.

Smythe, S. R. Co., Inc., Pittsburgh, Pa.

Swindle, W. & Bro., Pittsburgh, Pa.

Gauges, Rolling Mill

Haines Gauge Co., Philadelphia, Pa.

Gears

Boston Gear Works, Boston, Mass.

Gleason Tool Co., Rochester, N. Y.

Morse, Williams & Co., Phila., Pa.

Nuttall, B. D. Co., Allegheny, Pa.

Poole, Robt. Son & Co., Baltimore, Md.

Gears, Rawhides

Horsburgh & Scott, Cleveland, Ohio.

Gear Cutters

Gould & Eberhardt, Newark, N. J.

Whitton, D. E. Mch. Co., New London, Ct.

Glass Cutters

Barrett, W. L., Bristol, Conn.

Bultman, F. H. & Co., Cleveland, O.

Monce, S. G., Unionville, Conn.

Glass Cutting Boards

Lufkin Rule Co., Saginaw, Mich.

Glue

Baeder, Adamson & Co., Phila., Pa.

Tower & Lyon, 35 Chambers St., N. Y.

Golf Goods

Bridge-ort Gun Implement Co., 313 Broadway, N. Y.

Grates, Rocking

Sennett, Geo. P. Co., Youngstown, O.

Grinding and Polishing Mchs.

American Emery Wheel Works, Providence, R. I.

Barnes, W. F. & John Co., Rockford, Ill.

Brown & Sharpe Mfg. Co., Providence.

Builders Iron Foundry, Providence, R. I.

Cincinnati Milling Mach. Co., Cincinnati, O.

Fuller Mfg. Co., Kalamazoo, Mich.

Gorton, Geo. Mach. Co., Racine, Wis.

Lundis Tool Co., Waynesboro, Pa.

Norhampton Emery Wheel Co., Leeds, Mass.

Norton Emery Wheel Co., Worcester, Mass.

Safety Emery Wheel Co., Springfield, O.

Springfield Mfg. Co., Bridgeport, Conn.

Star Corundum Wheel Co., Detroit, Mich.

Tantite Co., Stroudsburg, Pa.

Whitney Mfg. Co., Hartford, Conn.

Grindstones

Cleveland Stone Co., Cleveland, O.

Guns

Hopkins & Allen Arms Co., Norwich, Ct.

Marlin Fire Arms Co., New Haven, Ct.

Remington Arms Co., 313 Broadway, New York

Gun Implements

Union Hardware Co., Torrington, Conn.

Hack Saws

Diaston, Henry & Sons, Inc., Phila., Pa.
Goodell-Pratt Co., Greenfield, Mass.
Miller-Falls Co., 23 Warren St., N. Y.
Springfield Machine Screw Co., Springfield, Mass.
Starrett, L. S. Co., Athol, Mass.

Hammers

Heller Bros. Co., Newark, N. J.
Logan & Strobridge Iron Co., New Brighton, Pa.

Hammers, Pneumatic

Chicago Pneumatic Tool Co., Chicago, Ill.
Q & C Co., Chicago, Ill.
Standard Pneumatic Tool Co., Chicago, Ill.

Hammerheads

Palmer, I. E., Middletown, Conn.

Hand Milling Machines

Costello, J. E. Machine Wks., Brooklyn, N. Y.

Hand Screws

Bliss, R. Mfg. Co., Pawtucket, R. I.

Hangers, Barn Door

Coleman Hardware Co., Chicago, Ill.

Hangers, Door

Arcade Mfg. Co., Freeport, Ill.

Courtn Trolley Track Mfg. Co., Hol. yoke, Mass.

Lane Bros., Poughkeepsie, N. Y.

Lawrence Bros., Sterling, Ill.

Louden Machinery Co., Fairfield, Iowa.

McCabe Hanger Mfg. Co., 533-543 W. 22d Street, N. Y.

McKinney Mfg. Co., Allegheny, Pa.

Ney Mfg. Co., Canton, Ohio.

Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Wilcox Mfg. Co., Aurora, Ill.

Hangers, Shafting

Ball Bearing Co., Boston, Mass.

Dodge Mfg. Co., Mishawaka, Ind.

Machinists Supply Co., Rochester, N. Y.

Hardware Comm'n Merchants

Graham, Jno. H. & Co., 113 Chambers St., N. Y.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Arcade Mfg. Co., Freeport, Ill.

Coleman Hardware Co., Chicago, Ill.

Logan & Strobridge Iron Co., New Brighton, Pa.

Millers Falls Co., 23 Warren St., N. Y.

Ney Mfg. Co., Canton, Ohio.

Nicol & Co., Chicago, Ill.

Parker, Chas., Co., Meriden, Conn.

Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Shepard, Sidney & Co., Buffalo, N. Y.

Stanley Works, New Britain, Conn.

Supplies Hdw. Co., Phila., Pa.

Union Mfg. Co., 103 Chambers St., N. Y.

Van Wagoner & Williams Hdw. Co., Cleveland, O.

Wrightsville Hdw. Co., Wrightsville, Pa.

Hardware Mfrs.' Agents

Graham, John H. & Co., 113 Chambers St., N. Y.

Wibusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Hardware Specialties

Acme Shear Co., Bridgeport, Conn.

Berger Bros. Co., Philadelphia, Pa.

Chantrell Tool Co., Reading, Pa.

Enterprise Mfg. Co., of Pa., Phila., Pa.

Graham, John H. & Co., 113 Chambers St., N. Y.

New Britain Hdw. Mfg. Co., New Britain, Conn.

Pleuger & Henger Mfg. Co., St. Louis, Mo.

Scranton & Co., The, New Haven, Ct.

Smith & Egge Mfg. Co., Bridgeport, Ct.

Wilson & Smith, Worcester, Mass.

Harness Snaps

Covert Mfg. Co., West Troy, N. Y.

Covert's Saddlery Wks., Farmer, N. Y.

Imperial Bit & Snap Co., Racine, Wis.

Hooks and Staples

McKinney Mfg. Co., Allegheny, Pa.

Hay Carriers

Goshen Mfg. Co., Goshen, Ind.

Hay Knives

Clark & Parsons Co., E. Wilton, Me.

Ney Mfg. Co., Canton, Ohio.

Hay Tools

Louden Machinery Co., Fairfield, Iowa.

Myers, F. E. & Bro., Ashland, O.

Ney Mfg. Co., Canton, O.

Heating and Ventilating Apparatus

American Blower Co., Detroit, Mich.

Bayley, Wm. & Sons Co., Milwaukee, Wis.

Boston Blower Co., Hyde Park, Mass.

Buffalo Forge Co., Buffalo, N. Y.

Persins, B. F. & Son, Holyoke, Mass.

Sturtevant, B. F. Co., Boston, Mass.

Heel Plates

Star Heel Plate Co., Newark, N. J.

Hinges

Lawrence Bros., Sterling, Ill.

McKinney Mfg. Co., Allegheny, Pa.

Stanley Works, New Britain, Conn.

Tiebout, W. J., 113 Chambers St., N. Y.

Hitching Posts

Hartman Mfg. Co., 309 Broadway, N. Y.

Hoes, Garden Planters, &c

Iowa Farming Tool Co., Fort Madison, Iowa.

Jenkins Iron & Tool Co., Howard, Pa.

Holsts, Air

Pedrick & Ayer Co., Philadelphia, Pa.

Ridgway, Craig & Son Co., Coatesville, Pa.

Holsts, Chain and Rope

Box, Alfred & Co., Philadelphia, Pa.

Calisholm & Moore Mfg. Co., Cleveland, Ohio.

Eckstein, C. G., 249 Centre St., N. Y.

Fulton Iron & Engine Works, Detroit, Mich.

Harrington, E., Son & Co., Phila., Pa.
McCoy, Jos. F. & Co., 26 Warren St.
Reading Crane & Hoist Works, Reading, Pa.
Spedel, J. G., Reading, Pa.

Hoisting Machines

Eastern Machinery Co., New Haven, Ct.
Lidgerwood Mfg. Co., 96 Liberty St., N. Y.

Hollow Mill

Geometric Drill Co., Westville, Conn.

Hollow Ware

Avery Stamping Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Rogers, Jno. M. Boat-Gauge & Drill Works, Gloucester, City, N. J.

Rome Mfg. Co., Rome, N. Y.

Horse Nails

Capwell Horse Nail Co., Hartford, Ct.
Mooney, W. M. & Co., Ausable Chasm, N. Y.

National Horse Nail Co., Vergennes, Vt.

Peabody Nail Co., Neponset, Boston, Mass.

Wiebusch & Hilger, Ltd., 9-15 Murray St., N. Y.

Horse and Mule Shoes

Burden Iron Co., Troy, N. Y.

Phoenix Horse Shoe Co., Poughkeepsie, N. Y.

Rhode Island Perkins Horse Shoe Co., Providence, R. I.

Horsehoe Studs

Leonhart & Co., Berlin, Schoneberg, Germany.

Hose

Boston Belting Co., Boston, Mass.

Peoples Rubber Mfg. Co., 16 Warren Street, New York.

Hose Couplings

Clark, W. J. & Co., Salem, Ohio.

Hose Coupling, Air

Pedrick & Ayer Co., Philadelphia, Pa.

Hose Washers

Canfield, H. O., Bridgeport, Conn.

House Furnishing Specialties

Williams, A. C. Ravenna, O.

Hydraulic Jacks

Dudgeon, Richard, 24 Columbia St., N. Y.

Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Machinery

Watson-Stillman Co., 204 E. 43d St., N. Y.

Hydraulic Tools

Watson-Stillman Co., 204 E. 43d St., N. Y.

Wood, R. D. & Co., Phila., Pa.

Ice Cream Dishers

Clad, V. & Sons, Phila., Pa.

Ice Cream Freezers

North Bros. Mfg. Co., Philadelphia, Pa.

White Mountain Freezer Co., Nashua, N. H.

Ice Shredders

Enterprise Mfg. Co., Philadelphia, Pa.

Erie Specialty Co., Erie, Pa.

Ice Tools

Gerlach, Peter & Co., Cleveland, O.

Williams, A. C. Ravenna, O.

Wood, Wm. T. & Co., Arlington, Mass.

Igniters, Gas Engine

Dayton Electrical Mfg. Co., Dayton, O.

Injectors

Hancock Inspirator Co., 85-89 Liberty St., N. Y.

Jenkins Bros., New York.

National Injector Co., Cleveland, Ohio.

Inspirators

Hancock Inspirator Co., 85-89 Liberty St., N. Y.

- Johnson, Israel H., Jr., & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis, Mo.
Kerrick, J. H., Minneapolis, Minn.
Lodge & Shipley Mch. Tool Co., Cin., O.
McCabe J. J., 14 Dey St., N. Y.
McDowell Stocker & Co., Chicago.
Manning, Maxwell & Moore, 83-89 Liberty St., N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Marshall & Hinchart Mchry. Co., Chicago, Ill.
National Machinery Co., Tiffin, Ohio.
New Doty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 178 Broadway, New York.
Niles Tool Wks., 188 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Ct.
Norwood Bicycle Co., Cincinnati, O.
Paradox Machinery Co., Chicago, Ill.
Pennsylvania Machinery Co., Phila., Pa.
Phila. Machine Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Poele, Robert & Son Co., Baltimore, Md.
Potter & Johnston Co., Pawtucket, R. I.
Poulterer & Co., Phila., Pa.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Sellers, Wm. & Co., Phila.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
Seyfert's Sons L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Silk, Anderson Co., Cincinnati, Ohio.
Thomas & Lowe Machinery Co., Providence, R. I.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill Robert & Co., Chester, Pa.
Whitcomb Mfg. Co., Worcester, Mass.
Windsor Machine Co., Windsor, Vt.
York, S. M. Co., Cleveland, O.
- Machinery, Wood Working**
Egan Co., Cincinnati, O.
- Machinery Springs**
Scott, Chas. Spring Co., Phila., Pa.
- Machine Builders**
Chapman, J. B. & Co., Springfield, Mass.
- Machine Screws—See Screws, Machine**
- Machine Screw Work**
Spencer Automatic Mch. Screw Co., Hartford, Conn.
- Machine Tools—See Machinery**
- Machine Work**
Nuttall, R. D. Co., Allegheny, Pa.
- Machine Wrenches**
Billings & Spencer Co., Hartford, Conn.
- Machinists' Scales**
Starrett, L. S. Co., Athol, Mass.
- Machinists' Tools and Supplies**
Billings & Spencer Co., Hartford, Conn.
King, J. M. & Co., Watford, N. Y.
- Manganese Bronze**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Manufacturing Properties**
Hillman, J. H. & Co., Pittsburgh, Pa.
- Manufacturing Sites**
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.
- Measuring Machines**
Rogers, Jno. M. Boy, Gauge & Drill Wks., Gloucester City, N. J.
- Meat Choppers**
Enterprise Mfg. Co. of Pa., Phila., Pa.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Woodruff, O. D., Pottstown, Pa.
- Mechanical Stokers**
Sellers, Wm. & Co., Phila., Pa.
- Metal Brokers**
American Metal Co., 52 Broadway, N. Y.
- Metal Ceilings**
Penn Metal Ceiling & Rfg. Co., Phila., Pa.
- Metal Coating**
Steel & Iron Metal Coating Co., West Chicago, Ill.
- Metal Factors**
Stroud, E. H. & Co., Chicago, Ill.
- Metal Lathing**
Penn Metal Ceiling & Roofing Co., Phila., Pa.
- Metal Packing**
Galvanic Metal Paper Co., 61 So. Washington Sq., N. Y.
- Metals**
Hendricks Bros., 49 Cliff St., N. Y.
Hoffeler, Theo. & Co., Buffalo, N. Y.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
Lewisohn Bros., 81-83 Fulton St., N. Y.
Rutter, A. T., 256 Broadway, N. Y.
- Metal Polish**
Hoffman, Geo. W., Indianapolis, Ind.
- Milling Machines**
Adams Co., Dubuque, Iowa.
Becker-Brinard Milling Machine Co., Pittsburgh, Mass.
Brown & Sharpe Mfg. Co., Providence, Cincinatti Milling Mach. Co., Cin., O.
Garvin Machine Co., Springfield and Varick Sts., N. Y.
Lucas & Glem, Philadelphia, Pa.
Niles Tool Works, Hamilton, O.
Whitney Mfg. Co., Hartford, Ct.
- Mining Knives**
Bishop, Geo. H. & Co., Cincinnati, O.
Palmer Hdw. Mfg. Co., Troy, N. Y.
- Mining Machinery**
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 100 Broadway, N. Y.
- Mining Screens**
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton St., N. Y.
Michigan Wire Cloth Co., Detroit, Mich.
- Miter Boxes**
Thomson Bros. & Co., Lowell, Mass.
- Molding Machines**
Adams Co., Dubuque, Iowa.
- Molding Machines**
Fridmore, Henry E., Chicago, Ill.
- Motor Fans**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Motors, Air**
Stow Flexible Shaft Co., Phila., Pa.
- Motors, Petroleum**
Daimler Mfg. Co., Long Island City, N. Y.
- Motors, Electric**
Eddy Electric Mfg. Co., Windsor, Conn.
General Electric Co., Schenectady, N. Y.
Seward Electrical Co., Cincinnati, O.
Sturtevant, B. F. Co., Boston, Mass.
- Nail Clippers**
Cook, H. C. & Son, Ansonia, Conn.
- Nail Machinery**
Greene & Co., Belleville, Ill.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
- Nail Pullers**
Atwater Mfg. Co., Southington, Conn.
Bridgeport Mfg. Co., Bridgeport, Conn.
Hagen & Reid, Troy, N. Y.
Scranton & Co., The, New Haven, Conn.
Snow L. T. New Haven, Conn.
- Name Plates, Machinery**
Murdock Parlor Grate Co., Boston, Mass.
- Natural Gas Pumps**
Norwalk Iron Wks. Co., So. Norwalk, Ct.
- Nickel Platers' Supplies**
Eddy Electric Mfg. Co., Windsor, Conn.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526-532 W. 25th St., New York.
- Nickeloid**
American Nickeloid Co., Peru, Ill.
- Norway Shapes**
Rowland, William & Harvey, Frankford, Philadelphia.
- Nuts—See Bolts**
- Nuts, Self-Locking**
National Elastic Nut Co., Milwaukee, Wis.
- Nut Machines**
Dunham Nut Co., Unionville, Conn.
- Oil Burning Appliances**
Rockwell Engineering Co., 26 Cortlandt St., N. Y.
- Oil Heaters—See Oil Stoves**
- Oil Stones**
Pike Mfg. Co., Pike Station, N. H.
- Oil Stoves—(See Stoves Oil, Vapor and Gasoline)**
- Oilers**
Hammer & Co., Branford, Conn.
Wilmut & Hobbs Mfg. Co., Bridgeport, Conn.
- Oilless Bearings**
North American Metalline Co., Long Island City, N. Y.
- Ore Breakers**
Aultman Co., Canton, O.
Cresson, Geo. V. Co., Phila., Pa.
- Ores**
Blair, Reed F. Co., Pittsburgh, Pa.
Samuel, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.
- Ox Shoes**
Scranton Forging Co., Scranton, Pa.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.
- Packing**
Boston Belting Co., Boston, Mass.
Galvanic Metal Paper Co., 61 So. Washington Sq., N. Y.
Morris & Robert, St. Louis, Mo.
Peerless Rubber Mfg. Co., 16 Warren Street, N. Y.
- Paints**
Dixon, Jos. Crucible Co., Jersey City, N. J.
- Paints Stretcher**
Covert Mfg. Co., West Troy, N. Y.
- Patent Solicitors**
Hamlin, Geo. R., Washington, D. C.
Howsen & Howson, Philadelphia and Washington.
Stocking, E. B., Washington, D. C.
- Pattern Letters**
St. Louis Electrotyping Foundry, St. Louis.
Cleveland Galvanizing Works, Cleveland, O.
- Perforated Metal**
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Phosphor Bronze**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
Phosphor Bronze Smelting Co., Limited, Philadelphia.
- Phosphor Tin**
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Haik & Naumann, 518 Pearl St., N. Y.
- Piano Plate Manufacturers**
Harney, H. C. & Co., Brooklyn, N. Y.
- Picture Wire**
Ossawa Mills Co., Norwich, Conn.
- Pig Casting Machines**
Glinther, G. H., Pittsburgh, Pa.
Peyl & Patterson, Pittsburgh, Pa.
- Pig Iron**
Baird, C. R. & Co., Phila., Pa.
Danville Bessemer Co., Danville, Pa.
Hickman, Williams & Co., Chicago, Ill.
Houston, C. B. & Co., Philadelphia, Pa.
Nicoll, B. & Co., 68 Wall St., N. Y.
Samuel, Frank, Philadelphia, Pa.
Snyder, W. P. & Co., Pittsburgh, Pa.
Superior Charcoal Iron Co., Grand Rapids, Mich.
- Pittsburgh Steel Co., Phila., Pa.**
- Pig Iron Storage**
Am. Pig Iron Storage Warrant Co., 4 Wall St., N. Y.
- Pile Drivers**
Vulcan Iron Works, Chicago, Ill.
- Pipe, Bent**
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Co., Pittsburgh, Pa.
- Pipe Coupling**
Williams, J. H. & Co., Brooklyn, N. Y.
- Pipe Cutting and Threading Machines**
Bignall & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.
- Pipe Grips**
Prentiss Vise Co., 44 Barclay, N. Y.
- Pipes, Fittings, &c.**
Jarecki Mfg. Co., Erie, Pa.
McNab & Harlin Mfg. Co., N. Y.
- Pipe, Riveted Steel**
Pollock, W. B. Co., Youngstown, O.
Seafie, Wm. B. & Sons, Pittsburgh.
- Pipe Unions**
Dart, E. M. Mfg. Co., Providence, R. I.
- Pipe, Water and Gas**
Lee-Odium Boiler Co., Memphis, Tenn.
National Tube Co., Pittsburgh, Pa.
Red Jacket Mfg. Co., Davenport, Iowa.
U. S. Cast Iron Pipe & Foundry Co., Phila., Pa.
Warren City Boiler Works, Warren, O.
Wood, R. D. & Co., Philadelphia, Pa.
- Planes**
Stanley Rule & Level Co., N. Y.
- Planers**
Amer. Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Bement, Miles & Co., Phila., Pa.
Detrick & Harvey Mch. Co., Baltimore.
Draper Mch. Tool Co., Worcester, Mass.
Niles Tool Works, Hamilton, Ohio.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.
- Plated Ware**
International Silver Co., Meriden, Ct.
- Plates, Iron and Steel**
Danville Bessemer Co., Danville, Pa.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Tidewater Steel Co., Philada., Pa.
Wood, Alan Co., Philadelphia.
- Plate Iron Work**
Scaife, Wm. B. & Sons, Pittsburgh.
- Pliers**
Bridgeport Mfg. Co., Bridgeport, Conn.
Utica Drop Forge & Tool Co., Utica, N. Y.
- Pneumatic Tools**
Chicago Pneumatic Tool Co., Chicago.
Phila. Pneumatic Tool Co., Phila., Pa.
Q & C Co., Chicago, Ill.
Standard Pneumatic Tool Co., Chicago, Ill.
- Pocket Knives**
Cattaraugus Cutlery Co., Little Valley, N. Y.
- Polishing Stands**
Ross, Josiah, Buffalo, N. Y.
- Polishing Wheels**
Divine Bros. Co., Utica, N. Y.
- Poultry Fencing**
DeKalb Fence Co., DeKalb, Ill.
- Poultry Nettings**
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Tivier, W. S. Co., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Poultry Netting Display Racks**
Burton, Matthew, Batavia, Ill.
- Power Hack Saws**
Hoefler Mfg. Co., Freeport, Ill.
- Power Hammers**
Beaudry & Co., Boston, Mass.
Brady Co., Syracuse, N. Y.
Dieckel & Eisenhardt, Philadelphia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Kidder, H. E., Worcester, Mass.
Long & Allstatter Co., Hamilton, Ohio.
Miner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The, New Haven, Conn.
- Power Transmitting Machinery**
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Machinists' Supply Co., Rochester, N. Y.
Norwalk Iron Wks. Co., So. Norwalk, Ct.
- Pressed Metal Work**
Avery Stamping Co., Cleveland, Ohio.
- Presses, Power**
Adriance Mach. Works, Brooklyn, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Ferracute Mach. Co., Bridgeton, N. J.
Hills & Jones Co., Wilmington, Del.
Lefter, Chas. & Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Mossberg & Granville Mfg. Co., Providence, R. I.
Niagara Machine & Tool Wks., Buffalo, Phila. Machine Tool Co., Phila., Pa.
Rudolph & Krummel, Chicago, Ill.
- Projectiles**
National Tube Co., Pittsburgh, Pa.
- Prauers**
Henry, John T. Mfg. Co., Hamden, Ct.
- Pulleys**
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Evans, G. F., Boston, Mass.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Saginaw Mfg. Co., Saginaw, Mich.
Woods, T. B. Sons, Chambersburg, Pa.
- Pump Chains**
Cleveland Galvanizing Works, Cleveland, Ohio.
- Pumping Machinery**
Cook, A. D., Lawrenceburg, Ind.
Flier & Stowell Co., Milwaukee, Wis.
Ingersoll-Sergeant Drill Co., 36 Cortlandt St., N. Y.
McGowan, J. H. & Co., Cincinnati, O.
Southwick Fdry. & Mch. Co., Philadelphia, Pa.
- Pumps**
Barnes Mfg. Co., Mansfield, O.
Deming Co., Salem, O.
Edson Mfg. Co., Boston, Mass.
Flint & Walling Co., Kendallville, Ind.
Humphreys Mfg. Co., Mansfield, O.
Myers, F. E. & Bro., Ashland, Ohio.
Red Jacket Mfg. Co., Davenport, Ia.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.
Wilder, S. & Co., Holliston, Mass.
- Punches, Conductors'**
Aveyra, Fred. J. Mfg. Co., Hamilton, O.
Woodman, R. Mfg. & Supply Co., Boston, Mass.
- Punches and Shears, Hand and Power**
Bethlehem Foundry & Machine Co., So. Bethlehem, Pa.
Biles, E. W. Co., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Long & Allstatter Co., Hamilton, Ohio.
Mersick C. S. & Co., New Haven, Conn.
New Doty Mfg. Co., Janesville, Wis.
Whitcomb Mfg. Co., Worcester, Mass.
Williams, White & Co., Moline, Ill.
- Punching and Shearing**
Harrington & King Perforating Co., Chicago, Ill.
- Push Carts**
Syracuse Chilled Plow Co., Syracuse.
- Pyrometers**
Brown, Edward, Phila., Pa.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.
- Quotation Records**
Globe-Wernicke Co., Cincinnati, Ohio.
- Railways, Industrial**
Hunt, C. W. Co., West New Brighton, N. Y.
- Rat and Mouse Traps**
Burditt & Williams, Boston, Mass.
- Razors**
Buck Bros., Millbury, Mass.
Swedish Razor Co., Worcester, Mass.
- Razor Hones**
Pike Mfg. Co., Pike Station, N. H.
- Reamers**
Morse Twist Drill & Mch. Co., New Bedford, Mass.
- Recording Gauges**
Bristol Co. Wat-fbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlstadt, N. J.
- Reels**
Hendryx, A. B. Co., New Haven, Conn.
- Refrigerators**
Maine Mfg. Co., Nashua, N. H.
Northern Refrigerator Co., Grand Rapids, Mich.
Wilke Mfg. Co., Richmond, Ind.
- Registers**
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.
- Relaying Rails**
Donaldson & Newton, Phila., Pa.
Hyde Bros. & Co., Pittsburgh, Pa.
Isaac Joseph Iron Co., Cincinnati, O.
May & Spalding, 32 Broadway, N. Y.
Steel Rail Supply Co., 100 Broadway, N. Y.
- Reloading Tools**
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
Ideal Mfg. Co., New Haven, Conn.
- Repairing Sets, Family**
Reot Bros. Co., Plymouth, O.
Star Heel Plate Co., Newark, N. J.
- Repair Outfits, Farmer**
Imperial Bit & Snap Co., Racine, Wis.
- Revolution Counters**
Pitkin, A. B. Machinery Co., Providence, R. I.
Taber Mfg. Co., Elizabeth, N. J.
- Revolvers**
Harrington & Richardson Arms Co., Worcester, Mass.
Hopkins & Allen Arms Co., Norwich, Ct.
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.
- Rheostats**
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Electric Controller & Supply Co., Cleveland, O.
- Rifles**
Hopkins & Allen Arms Co., Norwich, Ct.
Marlin Fire Arms Co., New Haven, Ct.
Remington Arms Co., 315 Broadway, N. Y.
Stevens Arms & Tool Co., Chicopee Falls, Mass.
- Riveters**
Phila. Pneumatic Tool Co., Phila., Pa.
- Rivets**
American Iron & Steel Mfg. Co., Lebanon, Pa.
Blake & Johnson, Waterbury, Conn.
Burden Iron Co., Troy, N. Y.
Clark & Cowles, Plainville, Conn.
Cobb & Drew, Plymouth, Mass.
Grand Crossing T. & K Co., Grand Crossing, Ill.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
Plymouth Mills, Plymouth, Mass.
Rockford Bolt Works, Rockford, Ill.
Townsend C. C. & E. F., New Brighton, Pa.
- Riveting Machines**
Bethlehem Foundry & Mch. Co., So. Bethlehem, Pa.
Shuster, F. E. Co., New Haven, Conn.
- Roasters and Bakers**
Shepard, Sidney & Co., Buffalo, N. Y.
- Roll Mill Machinery**
Morgan Construction Co., Worcester, Mass.
- Roll Turning Tools**
Tretlowey, Sam'l & Co., Ltd., Pittsburgh
- Roller Bearings**
Ball Bearing Co., Boston, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
- Rollers**
Whitehurst, R. W. & Co., Norfolk, Va.

Rolling Mill Machinery

Booth, The Lloyd Co., Youngstown, O.
Diamond Drill & Mach. Co., Bridgeboro, Pa.
Everson, B. M., Pittsburgh, Pa.
Farrell Fdry. & Mach. Co., Ansonia, Ct.
Frank-Kneeland Mach. Co., Pittsburgh, Pa.
Garrison, A. Foundry Co., Pittsburgh, Pa.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Mossberg & Granville Mfg. Co., Providence, R. I.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel
Booth, The Lloyd Co., Youngstown, O.
Farrell Fdry. & Mach. Co., Ansonia, Ct.
Frank-Kneeland Mach. Co., Pittsburgh, Pa.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Lorain Foundry Co., Lorain, Ohio.
Mesta Machine Co., Pittsburgh, Pa.
Phila. Roll & Mach. Co., Philadelphia, Pa.
Riverside Foundry Co., Cleveland, O.
Seaman, Steeth Co., Pittsburgh, Pa.
Totten & Hogg Iron and Steel Fdry. Co., Pittsburgh, Pa.
Youngstown Foundry & Machine Co., Youngstown, O.

Roofing and Siding
Cincinnati Corrugating Co., Piqua, O.
Kanneberg Roofing Co., Canton, O.
Penn Metal Ceiling & Roofing Co., Phila., Pa.
Scaife, Wm. B. & Sons, Pittsburgh, Pa.
Youngstown Iron & Steel Roofing Co., Youngstown, O.

Rope and Cordage
Waterbury Rope Co., 69 South St., N. Y.

Rope and Web Goods
Covert Mfg. Co., West Troy, N. Y.

Rope Shield
Ironclad Co., Columbus, Ohio.

Rope Transmission and Hoisting
California Wire Works, San Francisco, Cal.

Hunt, C. W. Co., West New Brighton, N. Y.

Leschen, A. & Sons, Rope Co., St. Louis, Mo.

Woods, T. B. Sons, Chambersburg, Pa.

Rubber Goods
Boston Belting Co., Boston, Mass.

Candfield, H. O., Bridgeport, Conn.

Peerless Rubber Mfg. Co., 16 Warren Street, N. Y.

Rules
Larkin Rule Co., Saginaw, Mich.

Stanley Rule & Level Co., 29 Chambers St., N. Y.

Sad Irons
Williams, A. C., Ravenna, O.

Sad Iron Handles
Schrayers, M. Sons & Co., Chicago, Ill.

Sand Blast Apparatus
Ward, Edgar T. & Sons, Boston, Mass.

Sand Mixer
Sellers, Wm. & Co., Inc., Phila., Pa.

Sand Paper
Baeder, Adamson & Co., Phila., Pa.

Sap Buckets
Shepard, Sidney & Co., Buffalo, N. Y.

Sap Spouts
Millar, C. & Son Co., Utica, N. Y.

Sash Balances
Caldwell Mfg. Co., Rochester, N. Y.

Pullman Sash Balance Co., Rochester, N. Y.

Sash Cords and Chains
Bridgeport Chain Co., Bridgeport, Conn.

Morton, Theo. & Elizabeth, N. Y.

Samson Cordage Works, Boston, Mass.

Silver Lake Co., Boston, Mass.

Smith & Egge Mfg. Co., Bridgeport, Conn.

Sash Locks
Fitch, W. & E. T. Co., The, New Haven, Conn.

Ives, H. B. & Co., New Haven, Conn.

Oeffinger, J. L., Chicago, Ill.

Sash Pulleys
Fox Machine Co., Grand Rapids, Mich.

Grand Rapids Hardware Co., Grand Rapids, Mich.

Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights
Barney & Reed Mfg. Co., Boston, Mass.

Brown, E. E. & Co., Philadelphia, Pa.

Enterprise Foundry Co., Cincinnati, O.

Sausage Stuffers
National Specialty Mfg. Co., Phila., Pa.

Saws
Atkins, E. C. & Co., Indianapolis, Ind.

Bishop, Geo. H. & Co., Cincinnati, Ohio.

Disston, Henry & Sons, Inc., Phila., Pa.

National Saw Co., Newark, N. J.

Simonds Mfg. Co., Fitchburg, Mass.

Saw Guides
Thomson Bros. & Co., Lowell, Mass.

Saw Handles
Ladd, W. C., Bristol, Conn.

Saw Sets
Disston, Henry & Sons, Inc., Phila., Pa.

Talbot Mfg. Co., 9 to 15 Murray, N. Y.

Saw Tools
Atkins, E. C. & Co., Indianapolis, Ind.

Scales
American Cutlery Co., Chicago, Ill.

Chaillou, John & Sons, 35-39 Cliff, N. Y.

Pelouse scale & Mfg. Co., Chicago, Ill.

Reading Hardware Co., Reading, Pa.

Standard Scale & Supply Co., Pittsburgh, Pa.

Scrap Metals
Blake, M. J. & M., 10th Ave. and 15th St., N. Y.

Botter, C., Hoboken, N. J.

Hoteller, H. A. & Sons, Phila., Pa.

Hoteller, Theo. & Co., Buffalo, N. Y.

Leonard, John & Co., 22 Broadway, N. Y.

N. J. Iron & Metal Co., Paterson, N. J.

Perry, Wm. H. Co., Providence, R. I.

Phillips, F. R. Sons, Phila., Pa.

Rogers, W. H., Bridgeport, Conn.

Sammels, M. Sons, Brooklyn, N. Y.

Smith, Morton B., New York.

Screens, Perforated Metal
Harrington & King Perforating Co., Chicago, Ill.

Screens, Window and Door
Daroy, Edw. & Sons, Philadelphia, Pa.

Screw Cutting Dies
Card, S. W. Mfg. Co., Mansfield, Mass.

Geometric Drill Co., Westville, Conn.

Rogers, Jno. M. Boat Gauge & Drill Wks., Gloucester City, N. J.

Wells Bros. & Co., Greenfield, Mass.

Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers
Brown, R. H. & Co., New Haven, Conn.

Disston, Henry & Sons, Inc., Phila., Pa.

Goodell-Pratt Co., Greenfield, Mass.

New England Specialty Co., No. Easton, Mass.

North Bros. Mfg. Co., Philadelphia, Pa.

Sawyer Tool Co., Fitchburg, Mass.

Union Mfg. Co., Buffalo, N. Y.

Screw Machinery
American Tool Wks. Co., Cincinnati, O.

Brown & Sharpe Mfg. Co., Providence, R. I.

Costello, J. E. Mch. Wks., Brooklyn, N. Y.

Draper Mach. Tool Co., Worcester, Mass.

Garvin Machine Co., Springfield and Varick Sts., N. Y.

Jones & Lamson Mch. Co., Springfield, Vt.

Windsor Mch. Co., Windsor, Vt.

Screws
Coach

Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.

Machine
Blake & Johnson, Waterbury, Conn.

Chicago Screw Co., Chicago, Ill.

Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.

Hubbell, Harvey, Bridgeport, Conn.

Miles, F. S., 305 Quarry, Philadelphia, Pa.

New Britain Hdw. Mfg. Co., New Britain, Conn.

Phila. Mach. Screw Works, Phila., Pa.

Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.

Rhode Island Tool Co., Providence, R. I.

Worcester Mch. Screw Co., Worcester, Mass.

Wood
Franklin Moore Co., Winsted, Conn.

Scroll Saws
Barnes, W. F. & John Co., Rockford, Ill.

Millers Falls Co., 28 Warren St., N. Y.

Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Scythe Stones and Whetstones
Cleveland Stone Co., Cleveland, O.

Pike Mfg. Co., Pike Station, N. H.

Seamless Steel Tubes
Janney, Steinmetz & Co., Phila., Pa.

National Tube Co., Pittsburgh, Pa.

Seed Sowers
Goodell Co., Antrim, N. H.

Sewing Machines
Demorest Mfg. Co., Williamsport, Pa.

National Sewing Machine Co., Belvidere, Ill.

Shafting
American Steel & Wire Co., Chicago, Ill.

Cresson, Geo. V. Co., Philadelphia, Pa.

Cumberland Iron & Steel Shafting Co., Cumberland, Md.

Dodge Mfg. Co., Mishawaka, Ind.

Fairmount Mch. Co., Philadelphia, Pa.

Finished Steel Co., Youngstown, O.

Jones & Laughlin Co., Pittsburgh, Pa.

Pittsburgh Steel Shafting Co., Rankin, Pa.

Sellers, Wm. & Co., Inc., Phila., Pa.

Clark & Cowles, Plainville, Conn.

Cleveland Wire Spring Co., Cleveland, O.

Dunbar Bros., Bristol, Conn.

Miller & Van Winkle, Brooklyn, N. Y.

Morgan Spring Co., Worcester, Mass.

Roland, Wm. & Harvey, Phila., Pa.

Sabin Machine Co., Montpelier, Vt.

Scott, Chas. Spring Co., Phila., Pa.

Tuck Mfg. Co., Brockton, Mass.

Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cutters
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges
Bommer Bros., Brooklyn, N. Y.

Coleman Hdw. Co., Chicago, Ill.

Stover Mfg. Co., Freeport, Ill.

Van Wagoner & Williams Hdw. Co., Cleveland, O.

Stacks
Scaife, Wm. B. & Sons, Pittsburgh, Pa.

Stamped Ware
Jenkinson, R. C. & Co., Newark, N. J.

Keen & Hagerty, Mfg. Co., Baltimore.

Stamping, Sheet Metal
American Hdw. Mfg. Co., Ottawa, Illa.

Dundee, Richard, 24 Columbia St., N. Y.

Place, N. Y.

American Steel Scraper Co., Sidney, O.

Clay Stamping Co., Cleveland, Ohio.

Cleveland Stamping & Tool Co., Cleveland, Ohio.

Davis & Buxton Stamping Co., Worcester, Mass.

Houghton & Buxton Mfg. Co., Worcester, Mass.

Jenkinson, R. C. & Co., Newark, N. J.

Konigslow, E. & Bro., Cleveland, Ohio.

McKenna, A. & T., Pittsburgh, Pa.

Wheeling Hinge Co., Wheeling, W. Va.

Staples and Double Pointed Tacks

Grand Crossing Tack Co., Grand Crossing, Ill.

Milwaukee Tack Co., Milwaukee, Wis.

Titchener, E. H. & Co., Binghamton, N. Y.

Steam Hammers, &c.
Denick & Eisenhardt, Philadelphia.

Dundee, Richard, 24 Columbia St., N. Y.

Steam Heating
Webster, Warren & Co., Camden, N. J.

Steam Separators
Harrison Safety Boiler Wks., Phila., Pa.

Webster, Warren & Co., Camden.

Steam Specialties
Hudson Spring Co., Worcester, Mass.

Hancock Inspirator Co., 35-39 Liberty St., N. Y.

Lunkenheimer Co., Cincinnati, O.

Mason Regulator Co., Boston, Mass.

Steel Balls
Cleveland Ball & Screw Co., Cleveland, Ohio.

Westwood Bicycle Co., Cincinnati, O.

Steel Buildings
Berlin Iron Bridge Co., East Berlin, Ct.

Boston Bridge Works, Boston, Mass.

Ritter-Conley Mfg. Co., Pittsburgh, Pa.

Scaife, Wm. B. & Sons, Pittsburgh, Pa.

Alan Wood Co., Philadelphia.

W. Dewees Wood Co., McKeesport, Pa.

Sheet Zinc
Illinois Zinc Co., Peru, Ill.

Mathiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Boxes
Heller, W. O. & Co., Montclair, N. J.

Moore, C. P., Ravenswood, W. Va.

Shelf Ladders
Bicycle Step Ladder Co., Chicago, Ill.

Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Milbradt, G. A. & Co., St. Louis, Mo.

Morley Bros., Saginaw, Mich.

Portland Ladder Co., Newark, N. J.

Shelving
Warren, J. D. Mfg. Co., Chicago, Ill.

Shipbuilders
Newport News Shipbuilding & Dry Dock Co., 1 Broadway, N. Y.

Shovels, Spades and Scoops
Griffiths, Geo. Co., Phila., Pa.

New Castle Shovel Co., New Castle, Pa.

St. Louis Shovel Co., St. Louis, Mo.

Sinks
Kilbourne & Jacobs Mfg. Co., Columbus, O.

Skates, Ice
Dame, Stoddard & Co., Boston, Mass.

Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Skates, Roller
Union Hardware Co., Torrington, Conn.

Winslow, Saml. Skate Mfg. Co., Worcester, Mass.

Skate Sharpeners
Osborn Mfg. Co., Cleveland, O.

Slaw Cutters
Disston, Henry & Sons, Inc., Phila., Pa.

Smelting Works
Reeves, Paul S., 760 S. Broad, Phila.

Soapstone Goods
Pike Mfg. Co., Pike Station, N. H.

Soldering Copper Handles
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Soldering Coppers
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Speaking Tubes
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialty Manufacturers
Franklin H. H. Mfg. Co., Syracuse, N. Y.

Smith & Egge Mfg. Co., Bridgeport, Ct.

Spelter
Illinois Zinc Co., Peru, Ill.

Mathiessen & Hegeler Zinc Co., La Salle, Ill.

Spelter Solder
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Spikes
American Iron & Steel Mfg. Co., Lebanon, Pa.

Spoons and Forks
International Silver Co., Meriden, Ct.

Sporting Goods
Dame, Stoddard & Co., Boston, Mass.

Spray Pumps—(See Pumps)

Springs
American Steel & Wire Co., Chicago, Ill.

Barne, Wallace Co., Bristol, Conn.

Clark & Cowles, Plainville, Conn.

Cleveland Wire Spring Co., Cleveland, O.

Dunbar Bros., Bristol, Conn.

Miller & Van Winkle, Brooklyn, N. Y.

Morgan Spring Co., Worcester, Mass.

Roland, Wm. & Harvey, Phila., Pa.

Sabin Machine Co., Montpelier, Vt.

Scott, Chas. Spring Co., Phila., Pa.

Tuck Mfg. Co., Brockton, Mass.

Welch, T. F. Mfg. Co., Boston, Mass.

Springs, Wagon, Etc.
Wurster, F. W. & Co., Brooklyn, N. Y.

Spring Cutters
Brooks, M. S. & Sons, Chester, Conn.

Spring Hinges
Bommer Bros., Brooklyn, N. Y.

Coleman Hdw. Co., Chicago, Ill.

Stover Mfg. Co., Freeport, Ill.

Van Wagoner & Williams Hdw. Co., Cleveland, O.

Stacks
Scaife, Wm. B. & Sons, Pittsburgh, Pa.

Tack and Nail Machinery
Kimball Bros. & Sprague, Brockton.
Perkins, Henry, Bridgewater, Mass.
Sweetzer, W. A., Brockton, Mass.

Tank Heaters
Novelty Mfg. Co., Rock Island, Ill.

Tanks, Iron and Steel
Lee-Odum Boiler Co., Memphis, Tenn.
Scaife, Wm. B. & Sons, Pittsburgh.

Tapes
Larkin Rule Co., Saginaw, Mich.

Tap Holder
Ideal Machine Works, Hartford, Conn.

Tapping Machines
Hubbell, Harvey, Bridgeport, Conn.

Taps and Dies
Beasley, C. H. & Co., Chicago, Ill.
Butterfield & Co., Derby Line, Vt.
Card, S. W. Mfg. Co., Mansfield, Mass.
Reeco, E. F. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield.

Telephones
Mianus Electric Co., Mianus, Conn.
Rawson Electric Co., Elyria, Ohio.

Terne Plate
American Tin Plate Co., Chicago, Ill.

Time Recorders
Chicago Time Recorder Co., Chicago, Ill.
Heywood Bros. & Wakefield, Gardner, Mass.
Nanz, C. & Co., 127 Duane St., N. Y.

Tin Mills
Philadelphia Roll & Mch. Co., Phila., Pa.
Phillips, F. R. Sons, Philadelphia, Pa.

Tinners' Tools and Machines
Niagara Machine & Tool Works, Buffalo.

Tin Plate
American Tin Plate Co., Chicago, Ill.
Merchant & Co., Inc., Philadelphia, Pa.

Tin Plate Machinery
Lloyd Booth Co., Youngstown, Ohio.

Tinware
Keen & Hagerty, Baltimore, Md.

Toe Calks Steel
Burke, F. F., Boston, Mass.

Toe Clips
Snow, L. T., New Haven, Conn.

Tool Chests
Am. Tool Chest Co., 200 W. Houston St., New York.
Bliss, R. Mfg. Co., Pawtucket, R. I.
Jennings, C. E. Co., 101 Reade St., N. Y.

Tool Holders
Hogson & Pettis Mfg. Co., New Haven, Conn.

Tools
Athol Machine Co., Athol, Mass.
Braunsdorf-Mueller Co., Elizabeth, N. J.
Brown, R. H. & Co., New Haven, Conn.
Goodell Pratt Co., Greenfield, Mass.
Mayhew, H. H. Co., Shelburne Falls.
Millers Falls Co., 28 Warren St., N. Y.
Springfield Machine Screw Co., Springfield, Mass.
Stanley Rule & Level Co., 29 Chambers St., New York.
Starrett, L. S. Co., Athol, Mass.
Stevens, J. Arms & Tool Co., Chicopee.
Tower & Lyon, 95 Chambers St., N. Y.
Tuck Mfg. Co., Brockton, Mass.

Tools, Blacksmith and Wheelwright
Champion Blower & Forge Co., Lancaster, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasoline
Schneider & Trencamp Co., Cleveland, O.

Tote Boxes
Clark, W. J. & Co., Salem, O.

Traps, Iron
Coleman Hardware Co., Chicago, Ill.

Traps, Animal
Hawkins, Co., Waterbury, Conn.

Tree Guard
Hartman Mfg. Co., 309 Broadway, N. Y.

Trolley
Box, Alfred & Co., Philadelphia, Pa.

Trowels
Bishop, Geo. H. & Co., Cincinnati, O.

Trunks
National Saw Co., Newark, N. J.

Trucks
Boston & Lookport Block Co., Lookport.
Kilbourne & Jacobs Mfg. Co., Columbus.
Lansing Wheelbarrow Co., Lansing, Mich.

Syracuse Chilled Plow Co., Syracuse, N. Y.

Tub Hoops
Oatman Bros., Medina, Ohio.

Tube Bending Machines
Bridgeport Tubing Co., Bridgeport, Ct.

Tubes, Seamless Drawn Copper, Brass and Bronze
Ansonia Brass & Copper Co., 29 John St., N. Y.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Randolph-Cloves Co., Waterbury, Conn.

Tubing, Brass
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Phoenix Tube Co., Brooklyn, N. Y.

Spoford, W. S. & Son, Providence, R. I.

Tubing, Iron
Phoenix Tube Co., Brooklyn, N. Y.

Tubing, Steel
Hecker-Baltzley Billet Co., Toledo, O.

Janney, Steinmetz & Co., Phila., Pa.

Leng's John S. Son & Co., 4 Fletcher St.

National Tube Co., Pittsburgh, Pa.

Shelby Steel Tube Co., Cleveland, O.

Statler-Rischoff Co., Chicago, Ill.

Wilmut & Hobbs Mfg. Co., Bridgeport.

Tumbling Barrels
Henderson Bros., Waterbury, Conn.

Northern Engineering Works, Detroit, Mich.

Turbobuckles
Cleveland City Forge & Iron Co., Cleveland, O.

Turned Metal Work
Doyle Machine Screw Co., Boston, Mass.

Twist Drills
Cleveland Twist Drill Co., Cleveland, Mass.

Morse Twist Drill & Machine Co., New Bedford, Mass.

New Process Twist Drill Co., Taunton, Mass.

Slocomb, J. T. & Co., Providence, R. I.

Standard Tool Co., Cleveland, O.

Twist Drill Grinders
Fuller Mfg. Co., Kalamazoo, Mich.

Upholsterers' Hardware
Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Valves, Gas, Water and Steam
Ashton Valve Co., Boston, Mass.

Chapman Valve Mfg. Co., Boston.

Crosby Steam Gate & Valve Co., Boston.

Jenkins Bros., 11 John, N. Y.

Kennedy Valve Mfg. Co., 75 John St., N. Y.

Lunkenhelmer Co., Cincinnati, Ohio.

McNab & Harlin Mfg. Co., 56 John, N. Y.

Mason Regulator Co., Boston, Mass.

Wood, R. D. & Co., Philadelphia, Pa.

Ventilating Fans
American Blower Co., Detroit, Mich.

Bayley, Wm. & Sons Co., Milwaukee, Wis.

Boston Blower Co., Hyde Park, Mass.

Buffalo Forge Co., Buffalo, N. Y.

Perkins, B. F. & Son, Holyoke, Mass.

Ventilator Appliances
Howard & Morse, 45 Fulton St., N. Y.

Ormsby, C. A., Melrose, Mass.

Ventilators
Merchant & Co., Inc., Philadelphia, Pa.

Vises
Athol Machine Co., Athol, Mass.

Bignall & Keeler Mfg. Co., Edwardsville, Ill.

Lewis Tool Co., 44 Barclay St., N. Y.

Massey Vise Co., Chicago, Ill.

Parker, Chas. Co., Meriden, Conn.

Prentiss Vise Co., 44 Barclay, N. Y.

Tower & Lyon, 95 Chambers St., N. Y.

Utica Drop Forge & Tool Co., Utica, N. Y.

Wagon Jacks
Covert Mfg. Co., West Troy, N. Y.

Cov. R's Saddlery Works, Farmer, N. Y.

Lane Bros. Co., Poughkeepsie, N. Y.

Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Washers
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.

Nut & Washer Mfg. Co., Milwaukee, Wis.

Wilson & Smith, Worcester, Mass.

Washers, Lead

Littleford Bros., Cincinnati, Ohio.

Milton Mfg. Co., Milton, Pa.

Washing Machines

Boss Washing Mch. Co., Cincinnati, O.

Brammer, H. F. Mfg. Co., Davenport, Ia.

Cyclone Washing Mch. Co., Battle Creek, Mich.

Eureka Co., Rock Falls, Ill.

Watchman's Clocks
Nanz, C. & Co., 127 Duane St., N. Y.

Water Gates
Kennedy Valve Mfg. Co., 75 John St., N. Y.

Water Wheels
Poole, Robt. & Son Co., Baltimore, Md.

Weldless Steel Flanges
Latrobe Steel Co., Philadelphia, Pa.

Well Supplies
Cook, A. D., Lawrenceburg, Ind.

Wheelbarrows
American Steel Scraper Co., Sidney, O.

Atlas Bolt & Screw Co., Cleveland, O.

Defiance Box Co., Defiance, Ohio.

Kilbourne & Jacobs Mfg. Co., Columbus.

Lansing Wheelbarrow Co., Lansing, Mich.

Syracuse Chilled Plow Co., Syracuse, N. Y.

Wheels, Steel
Havana Metal Wheel Co., Havana, Ill.

Wind Mills
Flint & Walling Co., Kendallville, Ind.

Window Cord
Samson Cordage Works, Boston, Mass.

Window Fasteners
Stanley Works, New Britain, Conn.

Window Weights
Barney & Reed Mfg. Co., Boston, Mass.

Wire
Cleveland Wire Spring Co., Cleveland, O.

Dillon-Griswold Wire Co., Sterling, Ill.

Kill Bros. & Burgher Steel Wire Co., McKees Rocks, Pa.

Miller & Van Winkle, Brooklyn, N. Y.

National Wire Co., New Haven, Ct.

New Haven Wire Mfg. Co., New Haven.

Prentiss, Geo. W. & Co., Holyoke, Mass.

Reading Screw Co., Norristown, Pa.

Stewart Wire Co., Easton, Pa.

Townsend, C. C. & E. F., New Brighton.

Trenton Iron Co., Trenton, N. J.

Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Chains
Bridgeport Chain Co., Bridgeport, Ct.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Oneda Community, Ltd., Niagara Falls, N. Y.

Wire Cloth
Barnum, E. T., Detroit, Mich.

Clinton Wire Cloth Co., Clinton, Mass.

Derby, Edward & Sons, Philadelphia.

Ester Wire Works Co., 65 Fulton St., New York.

Gilbert & Bennett Mfg. Co., 42 Cliff St., New York.

Howard & Morse, 45 Fulton St., N. Y.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., New York.

Ludlow Saylor Wire Co., St. Louis; Mo.

Michigan Wire Cloth Co., Detroit, Mich.

N. J. Wire Cloth Co., Trenton, N. J.

New York Wire Cloth Co., 102 Chambers St., New York.

Scheeler's Sons, Buffalo, N. Y.

Tyler, W. S. Co., Cleveland, O.

Wickwire Bros., Cortland, N. Y.

Wright & Colton Wire Cloth Co., Worcester, Mass.

Wire Cutters
Chandler & Farquhar, Boston, Mass.

King, J. M. & Co., Watertown, N. Y.

Utica Drop Forge & Tool Co., Utica, N. Y.

Wire Dies
McFarland, Wm., Trenton, N. J.

Wire Display Rack
Barton, Matthew, Batavia, Ill.

Wire Drawing Machinery

Morgan Construction Co., Worcester.

Mossberg & Granville Mfg. Co., Providence, R. I.

Wire Fences—(See Fencing, Iron and Wire.)

Wire Goods
Brooks, M. S. & Sons, Chester, Conn.

Darby, Edward & Sons, Philadelphia.

Gilbert & Bennett Mfg. Co., 42 Cliff St., New York.

Jencks, E. Mfg. Co., Pawtucket, R. I.

Michigan Wire Cloth Co., Detroit, Mich.

New York Wire Cloth Co., 102 Chambers St., New York.

Scheeler's Sons, Buffalo, N. Y.

Wickwire Bros., Cortland, N. Y.

Wire Goods Co., Worcester, Mass.

Wire Forming Machinery
Automatic Machine Co., Bridgeport, Ct.

Manville, E. J. Mch. Co., Watertown, Ct.

Nelson, A. H. Mch. Co., Bridgeport, Ct.

Rudolph & Krummel, Chicago, Ill.

Shuster, F. B. Co., New Haven, Conn.

Wire Mill Machinery
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Wire Mats
Hartman Mfg. Co., 309 Broadway, N. Y.

U. S. Wire Mat Co., Decatur, Ill.

Wire Nails
Dillon-Griswold Wire Co., Sterling, Ill.

Grand Crossing Tack Co., Grand Crossing, Ill.

National Wire Co., New Haven, Ct.

Townsend, C. C. & E. F., New Brighton.

Wire Nail Machinery
Miller, H. J., Bridgeport, Mass.

National Machinery Co., Tiffin, Ohio.

Perkins, Henry, Bridgeport, Mass.

Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Wire Parts
Jenkinson, R. C. & Co., Newark, N. J.

Wire Rods, Steel
Consolidated Iron & Steel Co., Bristol, Pa.

National Wire Co., New Haven, Conn.

Nicol, J. & Co., 68 Wall St., N. Y.

Prentiss, Geo. W. & Co., Holyoke, Mass.

Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope Clips
Cincinnati Railway Supply Co., Cincinnati, Ohio.

Wire Rope, Iron and Steel
American Steel & Wire Co., Chicago, Ill.

Broderick & Bascom Rope Co., St. Louis.

California Wire Works, San Francisco.

Hazard Mfg. Co., Wilkesbarre, Pa.

A. Leschen & Sons Rope Co., St. Louis.

Trenton Iron Co., Trenton, N. J.

Wat. Rbury Rope Co., 69 South St., N. Y.

Williamsport Wire Rope Co., Williamsport, Pa.

Wire Straightening and Cutting Machinery
Shuster, F. B. Co., New Haven, Conn.

Wood Hardware
Bliss, R. Mfg. Co., Pawtucket, R. I.

Wood Screw Machinery
Cook, A. S. & Co., Hartford, Conn.

Wood Trimmers
Fox Machine Co., Grand Rapids, Mich.

Wood Working Machinery
Egan Co., Cincinnati, O.

Ross, Josiah, Buffalo, N. Y.

Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrenches
Belden Machine Co., New Haven, Conn.

Chicago House Wrecking Co., Chicago, Ill.

Coe's Wrench Co., Worcester, Mass.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Keystone Drop Forge Co., Phila., Pa.

Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Star Mfg. Co., Carpentersville, Ill.

Trinmont Mfg. Co., Roxbury, Mass.

Williams, J. H. & Co., Brooklyn, N. Y.